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ABSTRACT

This volume presents a report on recent developments and current policy objectives in vocational education and training in Germany. The study is based on a conceptual and analytical framework jointly elaborated by the Organisation for Economic Cooperation and Development Secretariat and representatives of member countries. Part I is "The Historical Context of the Vocational Training System: Important Reforms and Debates on Vocational Training Policy since Enactment of the Vocational Training Act" (Lipsmeier). Part II, "Socio-Economic Structural Changes and Innovations in Vocational Training in Selected Economic Sectors," includes the example of the metalworking industry (Klein, Schlosser) and the example of the building trade (Johannson, Schuler). Part III, "The Responsiveness and Regulation of Training Capacity and Quality" (Koch, Reuling), reveals the importance of negotiation and cooperation between government (at federal and state levels), the social partners and research institutes in all aspects of the decision-making process from the elaboration of vocational training policy to the regulation of training capacity and quality. This complex method of cooperation, based on a historical tradition of codetermination, allowed vocational training to modernize its structures and processes to meet the challenges of the 1970s and the 1980s. The book concludes that the future of the dual system will depend on its continued attractiveness for young people and its ongoing capacity to adapt to changing conditions in the workplace. Contains 183 references. (KC)

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VOCATIONAL TRAINING IN GERMANY: Modernisation and Responsiveness

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VOCATIONAL TRAINING IN GERMANY: Modernisation and Responsiveness

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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FOREWORD

In 1990, the OECD launched a programme on the changing role of vocational and technical education and training (VOTEC). The activity included: country reports examining recent developments in national VOTEC systems and their responsiveness to changing jobs and needs of young people;[1] a cross-national study of educational pathways and participation in VOTEC;[2] a study on the integration of practical and theoretical learning;[3] and a series of international meetings providing lively information exchange and debates culminating in a high-level conference in November 1994: "Vocational and Technical Education and Training for the 21st Century – Opening Pathways and Strengthening Professionalism".[4]

Four policy seminars focused on the following themes of particular interest to OECD countries:

- linkages between various types and levels of general and vocational education and training;[5]
- implications of technological innovation for VOTEC;
- assessment, certification and recognition of skills and qualifications in VOTEC;[6] and
- advantages and pitfalls of modern forms of apprenticeship.[7]

This volume presents the "country report" on recent developments and current policy objectives in vocational education and training in Germany. The study is based on a conceptual and analytical framework jointly elaborated by the OECD Secretariat and representatives of Member countries.

Prominent themes in this report are: expanding the provision of firm-based training places in response to growing demand in the 1970s and 1980s; supporting the transition of youth, especially disadvantaged youth, into apprenticeship; adapting the quality of vocational training to the new technical and organisational requirements of the workplace and the changing needs of youth; developing innovative teaching and training methods that integrate theory and practice and allow greater scope for trainees' own initiative as well as new forms of training organisation. A central task during the 1980s has been the creation of broader-based training occupations and multi-skill key qualifications.

This study was realised by the German Federal Institute for Vocational Training (BIBB), Berlin, under the direction of Mr. Richard Koch and Mr. Jochen Reuling. Within

the OECD Secretariat Mme Marianne Durand-Drouhin was in charge of the VOTEC activity.

This report is published on the responsibility of the Secretary-General of the OECD.

NOTES

1. In addition to this book, a study of the Dutch VOTEC system is forthcoming.
2. Forthcoming in 1995.
3. Forthcoming in 1995.
4. Conference report forthcoming in 1995.
5. *Vocational Education and Training for Youth: Towards Coherent Policy and Practice*, OCDE, Paris, 1994.
6. *Assessment, Certification and Recognition of Skills and Qualifications in VOTEC*, forthcoming in 1995.
7. *Apprenticeship: Which Way Forward?*, OECD, Paris, 1994.

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INTRODUCTION

In Germany, vocational training to become a skilled blue- or white-collar worker is mainly conducted within what is known as the dual system of vocational training. In the late 1980s, more than two-thirds of the young people born in any one year completed a traineeship (apprenticeship) in one of the training occupations recognised by the State. School-based training programmes play a relatively minor role in numerical terms.

A contract between the training enterprise (the firm where the practical training takes place) and the trainee forms the basis of training under the dual system. Trainees spend three to four days a week at their training enterprise and attend a state-run vocational school on the remaining days. On-the-job training is often supplemented by blocks of training at external training centres. These are generally run by the chambers of industry and commerce and are mainly attended by trainees who are learning their trade in small enterprises.

About half of all training contracts are concluded with enterprises employing fewer than fifty persons. Less than 50 per cent of small enterprises provide any vocational training at all, however. Generally, enterprises finance their own training. The operating costs of external training centres are covered mainly by the membership fees that enterprises pay the district chambers and by the attendance fees charged for courses. Part-time vocational schools are financed by the federal and local governments.

Germany's vocational training system has been confronted with major challenges in recent times, especially since the mid-1970s, as a result of far-reaching changes in social and economic conditions. As in most other western industrialised countries, economic upheaval following a long period of growth as well as the widespread introduction of new technologies and organisational concepts has caused significant changes in companies' needs for skills.

Demographic developments had a major impact on the demand for training during the 1970s and 1980s in particular. A marked increase in demand was typical until the mid-1980s. This was followed by a rapid decrease in the demand for training places from then on. During this period, a continuous trend towards higher training qualifications emerged. As a result, severe imbalances sometimes developed in the inter-relation between the demand for vocational education, the supply and quality of training places, the demand for skilled workers, and trade and industry's demand for qualifications. Until the mid-1980s this was reflected *inter alia* in a lack of training places in certain regions and specific occupations; youth unemployment was unusually high by German standards

and there were problems guaranteeing high-quality and future-oriented vocational training for all young people.

Compared to the systems in other countries, the vocational training system in Germany has proved to be highly flexible in adapting its supply of training to changing demands in the quantity and quality of training. This high responsiveness of training supply in adapting to demand, despite the structural problems involved, is attributed in the following parts to the link between the market control over in-company training places and the self-regulatory mechanisms of the economy founded on state framework regulations. Nonetheless, state vocational training policy was also called upon to support the necessary adaptation and modernisation processes in training practice through appropriate programmes and regulations.

The radical changes that occurred during the 1970s and 1980s meant that vocational training policy had to assume more economic and socio-political responsibility. The efficiency of the vocational training system was generally seen as an important factor in guaranteeing the competitiveness of the German national economy. In addition, vocational training became more important as a socio-political instrument for integrating disadvantaged young people, in particular, into the working world.

Because of the uncertainty of future economic and social developments, vocational training policy makers were no longer able to base their decisions on the assumption that economic, technical, organisational and social structural developments would be stable and thus sufficiently predictable. Consequently, attention was focused on the question of how to improve the flexibility and capacity for responsiveness of the vocational training system so that it could cope with changing requirements.

This research report takes an historical, descriptive approach as well as an analytical one to examine the ways in which the vocational training system adapted to changing quantitative and qualitative demands in the 1970s and 1980s. It not only describes state programmes and reforms but also the institutionalised self-regulatory mechanisms which exist and the ability of the training system to innovate and adapt.

The report is divided into three main parts:

- *Part I*: the historical context of the initial vocational training system: important reforms and debates on vocational training policy since enactment of the Vocational Training Act.
- *Part II*: social and economic changes and innovations in vocational training in selected economic sectors: the metalworking industry and the building trade.
- *Part III*: the responsiveness and regulation of training capacity and training quality.

The themes of the three main parts are closely inter-related. The question of the ways in which vocational training has adapted to changing social and economic conditions is viewed from a different perspective in each case, however. Some repetition is unavoidable because of this thematic structure, however.

The first part provides an historical survey of the challenges that faced vocational training in Germany as well as the discussions in training policy circles and reforms in the 1970s and 1980s. The time period under discussion is defined by two important

milestones in the history of German vocational training: the passing of the Vocational Training Act in 1969 and the unification of the two German States in 1990.

The second part introduces two selected economic sectors, or occupational areas, the building trade and the metalworking industry, as examples in order to give more detailed information and give concrete shape to the historical perspective of the first part and the analytical perspective of the third part. This section explains the significance of the sectoral regulative level in the dual system of training, which is characterised by relative autonomy and differences between sectors.

In both case studies, details are given about the link between changing technico-economic and socio-demographic conditions in these economic sectors and the innovations implemented in vocational training structures and processes. The focus is placed on the responsiveness of vocational training practice and vocational training policy. In addition, in the case of important attempts at reform, the opinions of the main bodies involved are outlined as are the decision-making processes for education policy, and where the occasion arises, their failure.

The central theme of the third part is the responsiveness of the vocational training system to social, economic and technological changes. This issue is examined mainly from an analytical perspective as a problem of regulation. The first section looks at the way the supply of training responds to changes in terms of capacity and quality. The efforts of training providers to adapt to changes, the measures initiated through vocational training policy as well as the basic pattern of regulation in vocational training in terms of numbers and quality are presented against the background of the adaptations necessary.

Part I

THE HISTORICAL CONTEXT OF THE VOCATIONAL TRAINING SYSTEM IMPORTANT REFORMS AND DEBATES ON VOCATIONAL TRAINING POLICY SINCE ENACTMENT OF THE VOCATIONAL TRAINING ACT

by

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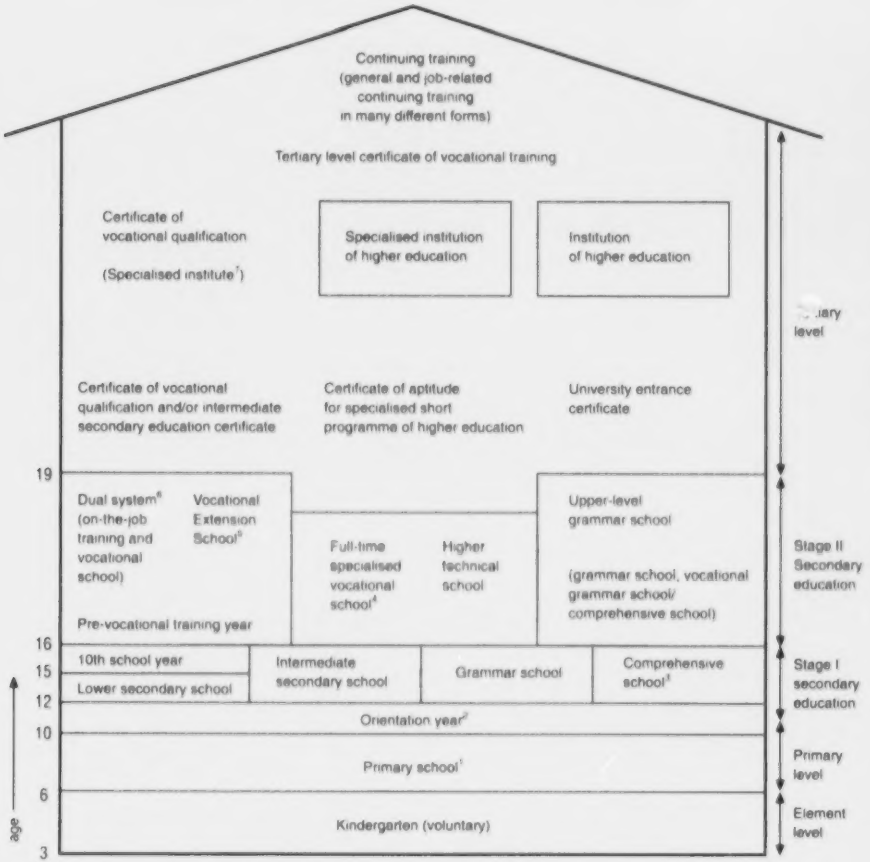
The highly differentiated system of vocational education and training in the Federal Republic of Germany comes into the category of stage II secondary education. It is thus placed between stage I general secondary education and the sector of continuing training and higher education. In contrast to the situation in many other countries, these areas are quite separate in Germany and any overlapping is only of marginal significance. This is due to the existence of very specific legislation within the different branches of education. In all sectors of education apart from continuing training, state regulations have been drawn up for the various educational institutions, the majority of which are public institutions. Placing vocational and technical education and training within the upper-secondary level (stage II secondary education) does not pose any particular problems in Germany since all initial vocational education and training below the level of higher education (with a few exceptions in the retraining and rehabilitation sectors, for example) takes place at this level, mainly under the dual system but also in full-time schools. (See Figure 1 for an outline of the structure of the education system.)

1. Vocational training in post-war Germany up until the enactment of the Vocational Training Act (1969)

Vocational training for craft, commercial and technical occupations has a long history in Germany. For some trades it dates back to the guilds of the early Middle Ages.

Figure 1. **Structure of the education system in the Federal Republic of Germany**



1. In the *Land* of Berlin, primary school lasts 6 school years and does not include an orientation year.
2. In all *Länder* except Bavaria, where the orientation year is on trial, and Berlin (5th and 6th school years included in primary school).
3. Some *Länder* have "regular" schools in addition to lower secondary, intermediate secondary and grammar schools. The remaining *Länder* have "offer" schools, a special type of school association or pilot school project.
4. Full-time vocational schools, with different entrance requirements, programme durations and certificates.
5. Either part-time parallel to vocational school or full-time after completing vocational school.
6. Depending on educational background (lower secondary, intermediate secondary or grammar school). The age of the trainees varies greatly according to when they enter and whether the training period is shortened. However, the majority are over 19 years of age when they complete their programme in the dual system.
7. Duration: 1 - 3 years.

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Nevertheless, although industrialisation began in the eighteenth century and continued at an increasing pace throughout the nineteenth century, officially regulated vocational training with specified training contents remained largely confined to the craft trades. Since the overwhelming majority of workers were employed in the primary sector (agriculture), organised on-the-job vocational training concerned only a small proportion of potentially eligible young people, and then, only those of the male sex.

This situation changed drastically around the turn of the century when, mainly for political reasons, the civic education of young people assumed new importance and on-the-job vocational training was supplemented by vocational schooling in vocational schools. In didactic and methodological terms, these schools evolved from the "further training schools" which were well established. Attendance was either voluntary or subject to local regulation, however. And so the dual system of vocational training (apprenticeship training) slowly emerged – in the absence, as yet, of any comprehensive legal framework – as the main form of vocational qualification.

After the end of the Second World War, two principles which had proved valuable in general education during the Weimar Republic were extended to vocational education and training, where they had particularly important consequences:

- the *Länder* were given responsibility for education policy, independent of the centralised power of the federal government;
- a pluralist governmental and legal system guaranteed non-governmental forces a strong influence in important areas of education policy.

However, the military governments of the Allied Forces wondered whether established educational institutions, including the dual system, should be allowed to survive the process of democratic re-education (Engel and Rosenthal, 1970, p. 12). Even the OECD expressed strong misgivings in 1971 about the modernity of the vocational training system in the Federal Republic of Germany, by which it meant essentially the dual system (OECD, 1973, p. 45 f.). Occasionally critical analyses were published by Germans, as well (Abel and Groothoff, 1959, p. 65 f.). Ultimately, however, in spite of all the reservations and criticism, the dual system was preserved and became more firmly established through the Vocational Training Act of 1969.

It should be mentioned that the Vocational Training Act governing on-the-job vocational training – the *Länder* being responsible for the vocational schools – was adopted in a particularly favourable political conjuncture, namely during the grand coalition between the two major parties (CDU/CSU and SPD). One hundred years earlier (the Trade and Industry Code was enforced in 1869), a long struggle began, to achieve a uniform legal framework for vocational training. These lasting confrontations testify to the conflicting interests of the principal actors: the employers, the trade unions and the State. Before the Vocational Training Act was enacted, another important issue was discussed in public hearings during 1967: whether vocational schools should also be brought within the purview of this law. Because of the principle of federalism in education policy, this would have necessitated an amendment to the Basic Law, however, which politically would not have been accepted.

Without going into the details of the Vocational Training Act (see for example Münch, 1987), it should be noted that this law governs the whole range of apprenticeship

training programmes in Germany, in other words, training occupations in industry, the craft trades, commerce, administration, agriculture and home economics. The public service, however, is excluded. The wide spectrum covered by this act is a unique feature of the German vocational training system. In most other European countries where apprenticeships are institutionalised, they are restricted to only a few areas of training or the economy (OECD, 1979; Hayes and Wheatley, 1979).

Although the Vocational Training Act was supported by a broad political majority, it nevertheless represented a compromise which did not satisfy the trade unions (''restoration instead of reform''). They continued to press for comprehensive legislation incorporating arrangements for the financing of vocational training and involving firms that were not providing training in the costs of training (levy financing).

2. Reform debates and strategies in the 1970s

From the education policy angle, the 1960s had been strongly marked by the drive to achieve equal opportunities. A 1964 publication by Picht played a major role in this debate. Against the backdrop of the Sputnik shock, Picht predicted an educational disaster for the Germany, basing his views and arguments mainly on comparisons with other industrial countries. The federal government (the coalition of Social Democrats and Liberals) took heed of these warnings. In its 1979 Education Report, it made many references to the (comparatively better) situation in other European countries as a means of justifying an aggressive education policy that increased public spending on education. Its most important objectives were to raise school attendance in the pre-primary area, increase the percentage of school leavers with university entrance qualifications and the number of higher-education students, and improve student-teacher ratios (BMBW, 1970).

While education policy and educational programmes in the 1960s and early 1970s focused on structural and quantitative aspects – justified in theoretical terms more or less convincingly by the principle of equal opportunity – towards the end of the 1960s qualitative aspects began attracting greater attention, a trend which started slowly and gained momentum in the following years. This concern was also reflected in protest movements among apprentices. Unlike the employers' associations, the federal government responded to their arguments and in its 1970 Action Programme expressed understanding for ''the unrest among working youth and public criticism of vocational education and training''.

The emphasis on more quality-oriented concepts and proposals had emerged somewhat hesitantly with the ''Recommendations and Expert Opinions of the German Committee on Education and Training'' (1954). These proposals were more fully elaborated in the ''Expert Opinion on the System of Vocational Educational and Training'' in 1964. In this report, the concept of a ''dual system'' is introduced for the first time, referring to the combination of part-time education in vocational schools and training in enterprises. However, the chief issue since the early 1960s was no longer the legal framework of vocational training or organisational measures. Structural reforms and new subject matter increasingly became the focus of debates as a result of technological changes (on the automation debate see OECD, 1966) and the process of democratisation of society (see

for example, KMK 1973; Deutscher Bildungsrat, 1973; Stratmann and Schlösser, 1990, p. 171 f. on the apprentices' protests in the late 1960s).

These reforms were largely inspired by the "Recommendations on Improving Vocational Education and Training" which had been published by the German Education Council, a forum of experts on education policy, a few months before the adoption of the Vocational Training Act. These recommendations had established important criteria and standards which were to influence future debate, by formulating broad goals for vocational training (Deutscher Bildungsrat, 1969, p. 25). Some of these goals, such as the requirement that training programmes should be comprehensive and properly planned or the requirement that trainers have teaching qualifications, read today like a statement of the obvious. At the time, however, they were the subject of strong conflict between diverging social interests, because they had introduced a new priority to the political debate on vocational education and training, namely the call to prepare young people for "occupational autonomy" (cf. Lipsmeier, 1978*b*, p. 123 ff.) in addition to the traditional goal of "occupational efficiency".

The employers' umbrella associations resisted these ideas, declaring the recommendation of the German Education Council on apprenticeships to be ideologically biased (BDA *et al.*, 1969). The employers argued that many of the demands of the German Education Council were already reality in vocational education and training, a claim which at the time (late 1960s, early 1970s) could be neither proved nor disproved because of the lack of empirical investigations into vocational training practice. This only changed at the beginning of the 1970s, when research findings brought to light certain shortcomings in vocational training, thus confirming that the demands of the German Education Council had been justified (Lipsmeier, 1978*a*, p. 115).

At the height of reform euphoria, the federal government – spurred on by the criticisms of vocational training which were borne out by these empirical studies – adopted on 15 November 1973, the "Principles on the Reform of Vocational Training (Key Points)". (The relatively pragmatic "Action Programme for Vocational Training" (1970) had aimed at rather marginal improvements in vocational training). They were intended as a major contribution towards the revision of the Vocational Training Act and towards reforming vocational training. The reform proposals aimed at improving the quality of vocational training, regulating the financing of training in enterprises and in extra-plant training centres as well as enhancing and developing responsibility and state supervision throughout the vocational education and training system.

The employers, on the other hand, insisted on traditional industrial legislation and conventional practices and objected vigorously to further state intervention in vocational education and training. It considered the principles of self-responsibility and subsidiarity to be the corner-stones of the vocational training system.

The debate on education policy in the early 1970s was, however, by no means confined to vocational education and training alone. It was part of a wider debate, influenced mainly by the programme publications and analyses of important committees involved in counselling and in co-ordinating policy, including the German Education Council (Recommendations of 1970 and 1974) and the federal and *Länder* Commission on the Planning of Education (Comprehensive Plan for Education of 1973). Their recommendations, which received considerable attention in education policy circles at the time,

will be only briefly presented here but two major orientations, more or less explicit in both documents, are noteworthy:

- First, there was a tendency to consider vocational education as part of upper-secondary education, which tended to reinforce links between general education and vocational schooling and training, both in organisational terms and with respect to curricula, didactic methods and pedagogy. Examples of this are the introduction of pre-vocational courses (introduction to working life) at lower-secondary level as well as proposals for institutional integration at the upper-secondary level like those envisaged, for example, by the *Land* of North Rhine-Westphalia with its 1972 concept of the "college stage".
- Secondly, it was proposed to reduce (not eliminate) the significant role of the dual system of vocational training by integrating more vocational training into full-time schools (full-time specialised schools); this was clearly stated in the projections and proposals of the education plan (BLK, 1973, p. 32).

This debate, dominated by arguments about improving the quality of vocational training, was also nourished by long-standing efforts (dating back to the concept of "realistic schools" in the 18th century) to overcome at least some of the narrowness of vocational training perceived solely as a preparation for a specific activity or occupation. According to German traditions, a person who has completed a programme of vocational training should be qualified to exercise his trade without any further training in the enterprise upon starting the job. This, however, requires a certain degree of specialisation during training. The concept of basic vocational training was developed to counteract this specialisation to a certain extent. This training was to be broad enough to provide the foundations for several related occupations and was to be the first stage of vocational training.

The first waves of rationalisation and the early signs of economic crisis in the post-war period, in the late 1950s, revealed the need for new responses in vocational education and training, based on a rational concept of "occupation". One set of responses recommended more teaching concepts, more systematic curricula and less specialisation in vocational training. In order to put these ideas into effect, "basic education concepts" (*e.g.* the Brunswick Plan, various modular education models etc.) were developed in the 1950s and 1960s (Lipsmeier, 1978*a*, p. 150 ff.). The Vocational Training Act of 1969 introduced a new situation from the outset by establishing the formal obligation for every vocational training programme to provide "broadly conceived basic vocational training" (§ 1).

In order to achieve this and to provide the necessary organisational framework, three sets of measures were subsequently implemented:

- *Curricular strategy*: Regulations were elaborated concerning the content of vocational training based on the principle of basic vocational education (selection and sequence of appropriate contents, especially for the first year of vocational training).

- *Regulatory strategy*: The number of training occupations was reduced from around 900 after 1945 to 627 in 1970 to 376 in 1990. This move was linked to broader elementary vocational training (basic occupations); industrial and technical specialisation have not declined. (An example is the reorganisation of occupations in the metalworking industry where the number of training occupations was reduced from 42 to 6, with 17 options of specialisation as defined in the training regulation of 1 August 1987.) By contrast, the stage-based training model, still valued by the Vocational Training Act and a model which inspired many training schemes as late as the 1970s, has been virtually abandoned today.
- *Legislative strategy*: Two regulations were developed for the recognition of training undergone in the basic vocational training year (be it in a dual "co-operative" form or at a full-time school) or at a specialised school. The regulations were adopted on 4 July 1972, with the proviso that certain curricular standards should be applied, especially concerning the extent of practical occupational training. At the same time, the training occupations included in the Regulation concerning the recognition of the basic vocational year (which covered about 50 per cent of all training occupations in 1972) were assigned to 11 broad occupational fields. Training during this year had to cover the entire range of an occupational field, naturally at the cost of specialisation.

Reserved from the outset, employers included this Regulation in their general critique of "rules which inhibit training", at a time when a shortage of trainee places was slowly making itself felt. They argued that the practical training element was insufficient and that the overly general definition of some occupational fields did not allow for the necessary specialisation. The government found itself obliged to amend the regulation. From 1 August 1978, the practical part of the basic vocational training year was regulated according to the specific conditions of different occupations and practical training in the basic vocational training year was substantially increased for all training occupations. In addition, the number of occupational fields in which a basic vocational training year could be taken was increased from 11 to 13, and some fields were differentiated according to different options in order to respond at least to some extent to the economy's demands for specialisation.

The tensions resurfaced in the mid-1970s when several *Länder* took steps to introduce the basic vocational education year into all sectors of initial vocational training. In this context it was difficult to counter the employers' argument that in spite of the 1978 revision, problems continued to exist when it came to specialisation. Nevertheless, upon empirical study, the employers' other argument, that those who had completed the basic vocational training year (or the first year in a full-time specialised school) were less advanced than apprentices in the dual system who had completed the first year of training, proved to be groundless. The question arises whether the employers' recognising the basic vocational training year (in full-time schools) was essentially a means of keeping the dual system, and with it their own sphere of influence, intact. Given the high rate of youth unemployment at the end of the 1970s and the serious shortage of trainee places, the federal government felt compelled – not only on this issue – to bend to the interests of the employers.

Similar developments occurred with respect to the funding of vocational training. The debate over funding must be seen in the context of repeated attempts to revise the Vocational Training Act after 1969. As mentioned above, the funding question had been one of the federal government's key points in 1973, following the 1969 proposal of the German Education Council (Recommendation on Apprenticeships), concerning the "redistribution of training costs among enterprises". This redistribution – by means of a tax to be imposed on enterprises benefiting from the training efforts of other firms – was intended as a way of improving the quality of vocational training and ensuring "the preservation of the enterprise as a place of learning", and hence the survival of the dual system as such.

These proposals were supported by the recommendations of an independent committee of experts on the costs and funding of vocational training. Its 1974 report made clear that the introduction of minimum standards of quality for vocational training would force many firms to abandon their training activities. This possibility was judged inacceptable in social policy terms, in view of the fact that the baby boom generation was due to come on to the labour market. The committee of experts therefore proposed setting up a vocational training fund to be financed by a 1 per cent levy on the total sum of wages and salaries paid by enterprises.

Alarmed by the shrinking supply of training places, which was also linked to the downturn in the economy, the German *Bundestag* (Federal Parliament), in the course of a heated debate on 11 June 1974, discussed the parliamentary proposal put forward by the CDU/CSU opposition group on the "Reform of vocational training and the updating of the Vocational Training Act". The debate was sharply polarised by conflicting interests: the CDU/CSU sided with the employers, at least on the issue of funding, while the SPD sympathised with the trade unions. They were unable to reach agreement, in contrast with the 1969 debate when the Vocational Training Act was passed.

In 1975, a draft for a new Vocational Training Act passed the *Bundestag* (Lower House) but it was rejected by the *Bundesrat* (Upper House, representing the *Länder*). The German employers' umbrella associations branded the efforts of the SPD/FDP government a "sham reform". They preferred to keep the existing 1969 Act, albeit with slight amendments, but refused to include any sort of funding regulation, which they saw as a threat to their sphere of influence and to the principle of self-administration.

The trade unions, on the other hand, argued for far-reaching changes in the legal framework of vocational training, including its funding arrangements. Further draft bills followed in 1976. In order to ensure an adequate supply of high-quality training places, despite the collapse of the attempted comprehensive reform, the SPD/FDP government coalition passed a funding law (Training Places Promotion Act) on 30 June 1976 which came into force on 7 September 1976. The Act did not have any of the objectives of intended reforms. The option of a tax included in the new Act was never applied. On 10 December 1980 the Act was declared invalid by the Federal Constitutional Court because it should have been ratified by the *Bundesrat*. This had not been possible due to the political balance of power prevailing at the time.

Later, on 2 December 1981, the *Bundestag* approved the "Vocational Training Promotion Act". Guaranteeing the continued application of the Vocational Training Act of 1969, this new law gave a legal basis to the Federal Institute for Vocational Training

(BIBB) and provided a legal framework for the planning of vocational training and the collection of vocational training statistics to be presented in a yearly report. In some respects this new law was based on the ill-fated Training Places Promotion Act, but it contains no funding provisions for vocational training. The main issue of contention in the controversial debates on vocational training policy in the 1970s had thus been avoided. It disappeared from the agenda, especially as the training place market started to recover its balance in the late 1980s. Nevertheless, in some sectors funding arrangements do exist, notably in the building industry where training costs are shared among firms; but these arrangements are based on the collective agreements between employers and the trade unions.

This largely concludes the story of the eventful decade of the 1970s. Bearing in mind that much more occurred, the main themes can nevertheless be summarised as follows:

- debates on new objectives for vocational education and training (*e.g.* "occupational autonomy");
- efforts to improve the quality of vocational training;
- stabilisation of the dual system;
- introduction of basic vocational education (not only by institutionalising the basic vocational training year but also by establishing it as principle in vocational training as a whole);
- attempts (aborted) to create a vocational training fund.

Of the many policy measures implemented during the 1970s, several are worth presenting in further detail.

Upgrading the qualifications of on-the-job trainers

A large number of specific measures were conceived following the 1969 Vocational Training Act to improve the professional skills and teaching qualifications both of full-time trainers and (the approximately 500 000) part-time trainers in charge of apprentice training within enterprises. In order to avoid further pressure on the training market in view of the high demand for training places (a demand which was no longer being met in the mid-1970s) and at the insistence of employers, the regulations concerning qualification requirements for instructors were relaxed in several respects. Transitional provisions were extended and exemptions from the instructor examination were granted to people with several years of experience in training, irrespective of their formal qualifications. In contrast to these specific measures, the regular updating and further development of occupational qualifications have been left to individual initiative. It is noteworthy in this context that the majority of full-time instructors are master craftsmen (or qualified technicians).

Institutionalisation of co-ordination between school-based and enterprise-based vocational training

One of the characteristics of dual vocational training in Germany is that learning takes place at two different locations (usually in an enterprise and in a school or

vocational training centre). This makes it necessary to harmonize the contents of the curricula at the different sites, which is more difficult than would be the case if training were conducted at a single site (*e.g.* in an enterprise). Since the 1969 Vocational Training Act governed only the training provided in enterprises, it could not resolve this harmonization problem. Consequently, an agreement was needed between the federal government (responsible for enterprise-based training) and the *Länder* Ministries of Education and Cultural Affairs (responsible for vocational training in schools), laying out the procedures according to which the co-ordination of education and training programmes was to take place. This agreement was reached in the joint findings report of 30 May 1972. On 17/18 May 1979 the initial procedures were refined in a resolution of the Board of the Federal Institute for Vocational Training (Benner, 1982, p. 67). Agreed patterns of negotiation were introduced to facilitate final agreement being reached on training regulations. These included:

- the so-called consensus principle, whereby the competent federal ministry issues a training regulation only following agreement by the social partners;
- the participation of experts (from industry, associations, the school system, etc.) in the drafting of training regulations.

Extra-plant training centres

Under the Vocational Training Act, a (company) training site can be regarded as suitable even if it cannot provide training in all of the curriculum prescribed by the training regulations, provided the missing elements can be covered through training outside the enterprise, for example, in extra-plant training centres or in another company (training syndicate). This regulation is especially important for small firms.

Extra-plant training centres became increasingly widespread after 1970. In addition to supplementary initial vocational training, these centres also provide other services, in particular retraining and further training courses. Especially after 1974 the federal government pressed for the rapid development of extra-plant training centres because of the growing shortage of training positions. In a federal government resolution of 26 October 1989, public support for these centres was extended and placed on a firm financial footing, thus confirming a policy orientation which could very well be interpreted as a strategy in favour of small- and medium-sized enterprises. The objective of 77 000 training places in the "old" *Länder* of the Federal Republic has almost been reached; a similar policy has already been introduced in the new *Länder* (former East Germany).

Development of full-time vocational schools

Although there have always been full-time vocational schools, both in pre-war Germany and in the Federal Republic of Germany, these schools remained confined to certain areas such as training for commercial occupations and home economics. Very diverse (in terms of duration, content, entry requirements, qualifications and their entitle-

ment) this type of education gained importance in the 1950s, and increasingly in the 1970s, notably due to the following developments:

- Extension of the preparation for vocational training (preparatory vocational year) and as a part of vocational training in full-time vocational schools (basic vocational training year, specialised full-time vocational schools).
- Full-time vocational schooling as an alternative (two-year programme in a specialised full-time vocational school, especially in commercial fields), or as a substitute or equivalent (three-year programme in a specialised full-time vocational school) for vocational training within the dual system (numerically insignificant).
- Full-time vocational schooling for higher-level vocational training, for instance at the "assistant" level (two- or three-year programme in a specialised full-time vocational school; vocational college).
- Full-time vocational schooling (sometimes organised as evening courses) within the framework of the so-called "second educational path" following nine or ten years of general education (lower secondary schooling). These arrangements offer – usually in combination with or after an apprenticeship – entry qualifications for specialised institutes of higher education (in which case these preparatory full-time schools are called vocational extension schools at the lower secondary level and specialised upper secondary schools or vocational colleges at the upper-secondary level). Schools which prepare studies for universities are called colleges, specialised grammar schools or upper-secondary vocational schools, different names being used in different *Länder*.

In summary, until the end of the 1970s, both legislation and policy concerning vocational training reflected industrial policies rather than employment and social policies (Baethge, 1983). Only recently has there been a trend to treat vocational training legislation as part of the legal framework of the education system as a whole. We will return to this issue in the last part in relation to continuing training.

3. The lack of training places and youth unemployment as dominant factors in vocational training policy until the mid-1980s

Policy problems resulting from the baby boom years (with a peak of 1.1 million children born in 1964) were foreseeable already in the late 1960s. High demand for training places set in from the mid-1970s. This demand could not be met either by extending the general education system (*e.g.* by increasing the intake in grammar schools and thereby raising the proportion of school leavers with university-entrance qualifications), or by developing full-time vocational schools (such as specialised full-time vocational schools).

It was therefore up to the public authorities to introduce incentives aiming at a significant increase in the number of training places. It was not so much the continuing "threat" (from the employers' viewpoint) of a possible financial regulation (a tax

system) but several other factors and measures which jointly had the effect of raising the number of training places:

- first, the CDU/CSU-FDP coalition addressed a dramatic appeal to employers, a call which was effectively heard;
- second, the government reminded employers of their responsibility with regard to vocational training (in virtue of the principle of autonomy) even though the attempt to embed this obligation in a legal framework ended in failure (Kittner, 1982; Ossenbühl, 1985).

Vocational training capacity was substantially increased, especially in the craft trades, thanks to the following measures:

- public funding for various programmes (*e.g.* for the disadvantaged and for the extension of full-time vocational schools);
- direct subsidies granted for the creation of additional training places;
- legal changes, which reduced existing constraints on training (*e.g.* changes in qualification requirements for instructors and in the Youth Labour Protection Act).

Education policy makers were thus faced with serious problems caused by the economic downturn and by the presence of exceptionally high numbers of children born during the baby boom years who had to be absorbed in schools, vocational training programmes and/or the labour market. The scale of the problem in vocational training is demonstrated by the fact that between 1974 and 1984 the demand for training places in firms rose constantly, in total by about 65 per cent (from 470 000 to 764 000), exceeding the supply by about 5 per cent (1984 and 1985). According to the (failed) 1976 Training Places Promotion Act, supply was supposed to exceed demand by 12.5 per cent so as to enable young people to make genuine choices. In that case, the shortage at the peak would have been 130 000 training places. The German Federation of Trade Unions (DGB), according to its own calculations, arrived at an even higher maximum deficit, of 326 000 training places (Stratmann and Schlösser, 1990, p. 252 ff.). After 1984 demand plummeted, and since the beginning of the 1990s, the supply of training places in firms again has clearly exceeded demand (at least in the old *Länder*).

There was considerable public criticism, not only over the numerical shortage, which at a level of 5 per cent did not appear too serious, but more particularly over the twofold "structural mismatch" (Dams, 1973, p. 36):

- First, a lot of young people were unable to train for their preferred occupations; many were forced into training occupations which did not really interest them and were not adapted to the needs of the labour market or economic policy. Thus drop-out problems, subsequent retraining, and even unemployment were programmed in advance.
- Second, there were marked regional and gender-specific differences in the provision of training places, which reinforced the problem of inequality of opportunity and infringed on the principle of comparable living standards for all, enshrined in the German Basic Law.

The main victims of the bottleneck in training opportunities were girls, the handicapped, those with learning problems and young foreigners.

4. Challenges and responses in the 1980s

Some of the main policy issues and developments in the 1970s continued to be relevant in the 1980s, for example:

- guaranteeing the quality of vocational training;
- achieving quantitative and qualitative co-ordination between vocational training and the employment system;
- the relationship between dual training and vocational training in full-time schools;
- the further development of the concept of basic vocational education (and efforts to introduce it in all training regulations);
- special measures for those with learning problems, young foreigners and German migrants from Central and Eastern Europe.

These aspects have been dealt with more or less in detail. Other issues, such as the unresolved problem of financial arrangements (specifically, the introduction of a tax funding system) were simply no longer on the agenda. However, others issues received greater attention, or indeed made their appearance for the first time in the 1980s. The principal ones are briefly presented below.

Development of continuing training

From the 1960s onwards, increased efforts were made to create closer links between initial vocational training and continuing training by structuring learning processes in secondary schools and in vocational training in a way that would stimulate participation in continuing training. The 1969 Vocational Training Act provided impetus to continuing vocational training by including it in the legal framework of regulations. The years which followed saw a major expansion in this sector of education, due mainly to economic and technical progress and to subsequent needs for higher and different qualifications in the labour market. The following developments are significant:

- An increase in regulations concerning certificates and qualifications in continuing vocational training, both at the federal level and at the level of the chambers (Lipsmeier, 1990). The federal government also regulated the qualification requirements for master craftsmen for all craft trade occupations and for industrial and other occupations. Regulations were also issued for vocational retraining and for the training of on-the-job trainers.
- Overall participation in continuing vocational training has increased significantly in the past 20 years, and especially in the 1980s in specialised schools (*e.g.* specialising in technician training) in on-the-job continuing training and also in vocational distance-learning courses (Kuwan *et al.*, 1990).

The trend to step up development of continuing vocational training (in terms of participants, programmes and institutions) is likely to continue through the 1990s. It is also currently being promoted by the "Concerted Action for Continuing Training", set up by the Federal Ministry for Education and Science at the end of 1987. Continuing training will remain an important aspect of social and labour market policy, especially due to the very high demand for continuing training in the new *Länder*. The expansion of this sector might lead to a slight reduction in the relative importance of initial vocational training. However, the recession is also taking its toll: promotion measures under the Labour Promotion Act were cut in 1993, resulting in a drop in the number attending continuing training programmes.

The "qualifications offensive"

Mainly with a view to curbing unemployment, in 1986 the federal government and the social partners launched the so-called "qualifications offensive", a vocational training initiative. In response to this, employers stated their willingness to carry out more practice-oriented training for the unemployed in the enterprise and in extra-plant training centres. A large part of the funds for the qualifications initiative has come from the Federal Labour Office, in virtue of the 1969 Labour Promotion Act. All sponsored measures have had to observe certain quality standards, which were determined jointly by the BIBB and the Federal Labour Office (Sauter, 1987, p. 196 ff.). In the meantime, the qualifications offensive – which was never unanimously accepted – seems to have lost some of its drive and has largely been absorbed into regular measures of employment promotion.

Implementation of new information and communication technologies in initial and continuing vocational training

International competition and regional market conditions are compelling companies in all industrialised countries to increase innovation. In the past twenty years, new information and communication technologies have become increasingly widespread in many economic sectors not only in industry, trade, the craft trades and the service sector but also in agriculture and the health sector. As a result, enterprises are being increasingly confronted with new types of decisions regarding product and service innovations, the use of technology, work organisation and the qualifications and training of personnel.

When the reaction times of initial and continuing training are compared, it is clear that continuing training generally responds more quickly to technological change. It can react to change more quickly because its curricular, organisational and financial framework can be modified more easily than in initial vocational training. Reactions to technological change in initial vocational training therefore occurred only in the 1980s. When change did set in, however, it was on quite a massive scale (virtually nation-wide). The main areas of modernisation were:

- initial and continuing training programmes for vocational school teachers and on-the-job trainers;

- equipping vocational schools and training establishments with appropriate machinery and equipment (computerised laboratories, CNC machines, CAD systems, etc.);
- modifying school curricula and training regulations for on-the-job training, especially for commercial and technical occupations.

By launching a series of pilot projects on "new technologies in vocational training" in 1983, the federal government made an early effort to contribute to such developments. Presently, new information and communication technologies have been fully implemented in initial and continuing vocational training, although constant updating will be necessary.

Innovative learning methods in vocational training and continuing training

Confronted with the above-mentioned changes in qualifications and new ideas about work organisation as well (disappearance of the division of labour? revival of teamwork?), vocational training educators are no longer so sure of their methods and didactic practices. For a long time they were able to rely on traditional methods, such as the four-stage method (motivate, demonstrate, imitate, practice). However, in the 1970s, doubts were cast on the validity of such approaches. This cannot only be explained as a result of changes in the employment system. Social processes of democratisation affected education in general and vocational education and training in particular and led to a reassessment of the contents and organisational forms of educational processes, teacher-student and trainer-apprentice relationships, and methods of teaching and training.

The re-orientation of vocational learning in Germany in recent years can be seen in two ways:

- an increase in the use of integrative teaching and learning processes (integration of theory and practice, of general and vocational learning) (BMBW, Annual, 1981, p. 50 f.);
- an increase in the degree of liberty in learning situations and more scope for trainees' own initiative (BMBW, Annual, 1982, p. 53 and 1986, p. 84).

Concrete reforms had already begun in the 1970s, inspired chiefly by the project-based teaching model, or "project-based training". The best-known example was the "steam-engine project" which was conducted in a large automobile factory. Since then, and especially in the 1980s, there have been many variants and new approaches such as the "*Leittext*" (guide-text) method, PETRA, etc. (Schmidt-Hackenberg *et al.*, 1989; BMBW, 1990, p. 359 ff., especially p. 365). These all provide examples of the triad of competences: "specialised occupational skills, methodological skills, social skills" and a combination of skills which have been circumscribed by such concepts as key qualifications, ability to act in the occupation, and extra-functional qualifications. They are also found in the new concept of qualification in the revised training regulations for the metalworking occupations (1987): trainees are to be given the skills that enable them to plan, execute and check their own work independently. This is undoubtedly a new quality in initial vocational training which merits extension to continuing training. It is already to a great extent reality.

This ends the survey of the most important challenges in and responses to vocational training and continuing training in the 1980s. In addition to the four themes specifically focused on here, other aspects, themes and problems played a role as well. Among these one could mention the (re-)establishment of academic research on vocational education and training (DFG, 1990) and the introduction of environmental education in initial and continuing vocational training (since the mid-1980s).

The 1990s will bring new approaches and make other reforms necessary. The following elements notably merit attention:

- The demand for qualifications in the five new federal *Länder*.
- European integration, which is becoming an increasingly important element in vocational education and training.
- The shortage of vocational school teachers which could, from the mid-1990s, threaten the very existence of the dual system of vocational training if appropriate measures are not taken in time.
- The need to develop an attractive dual system of continuing training as the upper level of the dual system of initial training. This should be done by strengthening further training regulations at the national level on the basis of a federal framework law which would not inhibit the pluralism of continuing training.

Major transformation in the system of vocational training is not likely to occur in Germany, however. This does not appear to be necessary even though the system seems to be to some extent in crisis since for the first time ever the total number of students has surpassed the total number of trainees.

Part II

SOCIO-ECONOMIC STRUCTURAL CHANGES AND INNOVATIONS INVOCATIONAL TRAINING IN SELECTED ECONOMIC SECTORS

A. The example of the metalworking industry

by

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Training in the metalworking industry prepares not only for metal-processing occupations but also for electrical engineering and commercial ones. The following sector report deals with issues and methods of reforming vocational training in the metalworking industry. It focuses only on metalworking occupations, and this for several reasons.

We live in a time of economic, technological and social change. The study here looks at the potential of the metalworking industry for flexibility and thus the extent to which the associations, organisations and institutions involved in the reform process in this sector are willing and able to adapt to economic, technical and social changes. This survey does not intend to give a complete overview of the changes in all the training occupations affecting metalworking enterprises. These enterprises focus their training on metalworking occupations, as is illustrated by the number of training contracts recently concluded in the techno-commercial occupations, which have already been the object of a reform. In 1987, there were 47 200 new contracts in metalworking occupations compared with 17 400 new contracts in electrical engineering occupations. Together, they account for 25 per cent of the 252 000 new contracts concluded in industry and commerce and for about 12.5 per cent of the 507 000 training contracts in all occupations.

This illustrates the importance of the new occupations for the training sector. As "cross-sectional" occupations, they are represented in all industrial sectors, but are to be

found primarily in the metalworking industry (Berufsbildungsbericht, 1990, p. 34 ff.; Berufsbildungsbericht, 1989, p. 100). The main reason for confining analysis to the reform process in the metalworking occupations is, however, their role as a vanguard in the entire restructuring process. The discussions on the reform of the metalworking occupations set the tone and are consequently those which will be documented here.

1. The historical context

Scope and structure of the training occupations

Training in the metalworking industry remained rooted in traditional and highly specialised mono-occupations oriented towards single activities. In view of changing job structures this was to prove increasingly problematic as a form of training. The Working Group for Vocational Training in Companies (*Arbeitsstelle für Betriebliche Berufsausbildung*) – an association of employers' organisations comprising the Federation of German Industries (BDI), the Federal Confederation of German Employers' Association (BDA) and the Association of German Chambers of Industry and Commerce (DIHT) – was a body which decisively influenced work on the training regulations. Until it was disbanded in 1971, it was more inclined to preserve old structures.

As in vocational training as a whole, adaptation in the metalworking industry was limited to eliminating a small number of apprentice and semi-skilled occupations, creating several new occupations and modifying numerous occupational profiles. High-skilled occupations such as those of toolmaker, motor vehicle fitter and mechanic thereby remained unchanged, while others such as those of turner, universal miller, horizontal boring mill turner and machine fitter underwent minor changes.

Regulatory measures did not keep pace with the changes in job tasks, and updating training contents was at the discretion of companies, whose innovativeness depended on their own demand for qualifications. This was bound to be reflected in the quality of training in general. The situation became particularly serious in those metalworking occupations which could be found in a wide cross-section of the sector and which were particularly attractive to prospective trainees. The occupations of machine fitter, operations fitter, toolmaker and mechanic came into this category and in the 1970s an average of 75 per cent of trainees in the industrial metalworking occupations opted for these (Gesamtmetall, 1981).

Changes in skilled work and in the demand for qualifications

The widening discrepancy between the development of job tasks as a result of technological and organisational change and the standard of training was pointed out in the 1950s and early 1960s by specialists in industrial and labour sociology, in what was known as the automation debate. Their studies generally included important sectors of the metalworking industry such as mechanical engineering, car manufacturing or the iron and steel industry.

Initially, politicians and specialists in the field were concerned with restoring and preserving what seemed to be tried and proven. They failed to deduce from these sociological studies that the content and structure of conventional vocational training were no longer adequate in ensuring that the qualification structure met workplace demands.

Regardless of how the development of work was conceived at that time in the context of highly mechanised and automated industrial production, whether it was seen as a trend towards dequalification, higher qualification or polarisation, the debate left no doubt that industrial work was in the throes of fundamental change resulting from a process of differentiation and specialisation. Employees were subject to growing pressure to be mobile and adaptable, and the composition of occupations was being radically altered.

Change of occupation could no longer simply be attributed to an individual's having made the wrong choice of training programme; the evidence showed that this was an economic reality related to technological progress. Studies dealing explicitly with the changing activity profiles in industrial work showed that qualifications relating to non-specific tasks were gaining in importance over those linked to particular work tasks – a finding significant for training contents. Concepts such as "perception", "technical intelligence", "skills unrelated to the production process" and "technical sensitivity" were used to describe the development of work qualifications under discussion at that time (Kern and Schumann, 1970).

Changes in work became completely unpredictable from the mid-1970s onwards, when microelectronics started to find widespread application as control technology. It was becoming increasingly significant in industrial production: while it accounted for merely 5.3 per cent of the product value in mechanical engineering in 1978, it had increased to 33.7 per cent by 1986 (Seltz and Hildebrandt 1989, p. 27).

In social research on work and technology, there is a growing consensus that workplace requirements have changed from a focus on sensory-motor skills to cognitive potential for knowledge and action (Pries *et al.*, 1990, p. 110 ff.). Reference is made to a further "mediatisation" of industrial work, which in turn leads to an intensification of job requirements relating to plant and installation systems as opposed to product-related ones. This has already been shown by comparing work on traditional lathes and milling machines to that done using CNC machine-tools (Bonz, 1991). Finally, since the early 1980s, there has been debate on whether or not the developments in industrial work can be described as a trend towards retraining semi-skilled industrial workers (Kern and Schumann, 1984).

The conclusions to be drawn for vocational training from industrial sociological analyses are clear. As early as the mid-1960s, LUTZ saw the need to "reform vocational training" and called for "training for industry... to be adapted to the pace and scope of expected technological change" (Lutz *et al.*, 1965, p. 118).

One of the best ways to prepare a workforce for future changes in technology and work organisation is to encourage young people to adapt and undertake continuing training. Whether the conditions necessary to pursue these goals were present is the subject of the following section.

The crisis in the organisation of training and learning

Initial training became increasingly institutionalised in large industrial companies in the 1960s (BMBW, 1987; Schlösser *et al.*, 1989). This implies a process in which training becomes an independent organisational unit of a company, with its own tasks and labour division. In concrete terms, the emphasis of training shifted: more training was taking place in trainee workshops than in the workplace. This change was attributed to processes of adaptation in the training structure (such as the increase in the volume of training and new demands as regards contents). It was also put down to the effects of rationalisation processes on different departments within companies.

Three principles of labour division and task differentiation can be distinguished, each being a dominant form of the internal division of labour among trainers. Core course groups, specialised groups and occupational groups respectively vary in their degree of specialisation and task complexity as well as in the duration of supervision for identical groups of trainees. In the past the "course model", which was the most practical model of organisation for the trainers, gained acceptance in company-based and extra-plant training centres (Wiemann, 1989). The term "course model" is used to describe a didactic model distinguished by a chain-like succession of learning steps which are similar in form and build on one another. The model's learning sequences are representative of an occupation or a whole group of occupations. Generally, they are neatly parcelled off from one another and so far removed from the complex realities of skilled work that any social and economic interdependence is usually excluded. The structure of learning is extremely standardized, as illustrated by the large number of learning aids (instruction and work sheets, instruction boards, audio-visual media and specialist literature). Achievement tests are exact and objective with regard to the learning goals. Course instruction organised in this way imparts the necessary knowledge with great reliability. Furthermore, the rigid regimentation of vocational learning promotes the acquisition of instrumental work behaviour including extrafunctional qualities essential for work organisation such as punctuality, precision, awareness of quality and work discipline (Dahrendorf, 1956). Courses are planned in advance and learning aims, aids, pace and tests are standardized to such an extent that the training staff are not required to prepare and revise teaching material or draw up performance tests (Wiemann, 1989).

Formal pedagogical qualifications for vocational trainers were only systematically required when the Trainer Aptitude Regulation came into force in 1972. At that time, the most widespread methods for on-the-job training were prescriptive action sequences such as the so-called "Three-step Method" (demonstration, imitation, practice) and the "Four-step Method" (preparation, demonstration, execution and perfection) propagated by the Association for Work Studies and Manufacturing Organisation (REFA, 1975).

In the following period, this method of organising learning and training came under increasing pressure resulting from the progressive diffusion of new technologies into the work process and the accompanying changes in qualifications. In addition, the aforementioned methodological algorithms could no longer respond adequately to the rapid differentiation of training sites and the growing heterogeneity of trainee groups (Pampus, 1987). The course concept became the subject of criticism at an early stage in discussions on the pedagogy of the profession. One objection was that the excessively sequential

organisation of learning and simulative learning situations blocked out the full context of occupational activities, and that the deterministic fixing of learning objectives and learning steps left no room for flexibility. The learning process was said to be too strongly influenced by the trainers (and alienated from the trainees) and therefore inadequate in preparing trainees to perform skilled work independently. This criticism was taken into account by the introduction of school subjects such as "An Introduction to Working Life", in basic vocational training and in young worker teacher training (Wiemann, 1974). However the predominance of the course concept in the metalworking industry remained unchallenged until the early 1970s.

2. Reform concepts, regulatory problems, the capacity of institutions to adapt

Reform of the training regulations

Initial attempts at reform: basic vocational training and stage-based training

New training regulations concerning the metalworking industry occupations and the new industrial electrical engineering occupations were introduced on 1 August 1987. These were followed by regulations for the new metalworking and electrical craft trade occupations. Prior to this, there had been various reform proposals which will not be dealt with in detail here (Stratmann and Schlösser, 1990). Common to all of them was the demand for broadly based pre-vocational training. It was to be conducted in "basic courses" in enterprises and "basic specialised studies" in schools, to help cope with the changes in occupational profiles and a relaxation of the boundaries between occupations. When it came to practical implementation, however, it soon became obvious that the different parties involved had very differing ideas about pre-vocational training and especially its role in relation to specialised vocational training. In this context the discussions on pre-vocational training did not lead to clear directions for reform (Stratmann, 1976).

In view of this situation, stage-based training appeared to be a decisive breakthrough in efforts to "restructure vocational training" (Krause, 1969). It was considered the only acceptable alternative to the status quo. Considering the changing demands of companies and expectations of young people regarding training, broad-based pre-vocational training followed by specialised training seemed to be the way to ensure the training system retained the elasticity it needed. Various institutions submitted stage-based training schemes for the metalworking industry in the 1960s. These schemes were not new in their approaches to the structure of training. They were based on the "Brunswick Plan" conceived in 1949, which foresaw training divided into basic, core and specialised segments with a reduction of the metalworking industry occupations to six "core occupations" considered to be the foundation for subsequent specialised training programmes (see Friede, 1982).

The stage-based training concept (following heated internal dispute) was initially accepted and supported even by the trade unions. It became the basis for restructuring the industrial electrical engineering occupations, a process completed in 1972. This envis-

aged that trainees gain their first vocational qualification after two years. However, stage-based training was difficult to implement in companies. There was dispute over collective agreement rights, the opportunities for continuing school-based training after completion of the first stage and in particular whether trainees should be accepted for the second stage and on what conditions. Regarding the practice of stage-based training in companies, trade unions and employers seemed to be pursuing different educational goals. The unions wanted vocational qualifications to be polyvalent both horizontally and vertically and thought that initial training should be tightened up and shortened. The employers, on the other hand, were in favour of adapting training contents and qualifications to companies' respective requirements (IG Metall, 1976). The example of stage-based training in the electrical occupations showed that these two positions were incompatible. Consequently, trade unions and employers abandoned the attempt to restructure the metalworking occupations according to the stage-based concept. Although this plan had been adopted at the same time as the one for restructuring the electrical occupations, its implementation was delayed due to the large number of metalworking occupations that had to be restructured and the extensive work involved in determining the contents of training (Kuda and Mignon, 1979).

The process of restructuring the industrial metalworking occupations

The Procedure for Structuring Training Occupations laid down on the basis of Section 25 of the Vocational Training Act is key to the work on regulations carried out in the 1970s and 1980s and the results. It had a decisive influence on the adaptability of the regulations adopted, particularly in the case of the industrial metalworking occupations. These regulations will be outlined in the following with reference to written documents and the minutes of experts' consultations. This procedure regulates the course of regulation work and with it, the work of the organisations and institutions involved.

Various institutions and groups have to reach agreement so as to ensure that diverse aspects of educational, economic and social policy are taken into consideration in regulation work. The elaboration of new training regulations involves the competent ministries of the federal government (the specialised ministries, the Federal Ministry of Education and Science) and the ministries of education of the *Länder* (the latter due to the harmonization necessary with core vocational school curricula). It is established practice (though without a legally binding framework) that they are joined by employers and trade unions – the central protagonists in this work of regulation – and by the Federal Institute for Vocational Training (BIBB), a scientific research body. Due to continual diversification and ever-changing work and training structures, the participation of a scientific research body is especially vital in metalworking and electrical occupations. The involvement of employers and trade unions is similarly imperative for new regulations to be implemented smoothly in companies, as is the aim.

Compared to the past, the trade unions now play a more important role in reforming the training regulations, which is normal given their influence on company training. Their right to co-determination is founded on what is known as the consensus principle. According to this, the law obliges the parties who negotiate collective agreements (the employers and unions) to reach agreement. The course and progress of the restructuring

work was thus to a great extent dependent on the willingness of the social partners and their experts to compromise. With their practical experience in companies the latter have a decisive voice in the shaping of regulations, especially with regard to the practical aspects of training.

The trade unions, represented by IG Metall, the industrial trade union for the metalworking sector, and employers, represented by Gesamtmetall, dominated the restructuring procedure. An agreement was reached regarding content standards. This accord, which preceded discussion of the bill, set the tone of the restructuring procedure.

The positions put forward by the collective-agreement parties at first seemed incompatible. IG Metall demanded that "the planning and organisation of new training programmes take greater consideration of employees' social and economic interests". It wanted a "basic occupation" with a basic training grounded in theory. This implied uniformity of training programmes as well as the abolition of two-year training occupations. Furthermore, IG Metall wanted in-company training to be supplemented by training provided by public training institutions (IG Metall, 1976). On the contrary, Gesamtmetall proceeded from a "differentiated training model" with two- and three-year training programmes. The two-year programme would develop the ability to accomplish difficult tasks under guidance and supervision. The teaching of more comprehensive knowledge, particularly in the field of technology, would be reserved for three-year vocational training programmes. On the one hand, this proposal was said to be the only way of opening training perspectives to young people who were poor learners and preventing youth unemployment. On the other hand, this training model was aimed at meeting companies' needs for skills in view of varied demands in the workplace (*Handelsblatt*, 28 October 1976).

Gesamtmetall's concept was oriented towards traditional training in the mono-occupations, and the idea that companies' demands for qualifications were becoming highly differentiated and tending to decline in the course of technological change. However, the fact that the occupational qualifications would not be polyvalent was reason enough for the proposal to be dropped in favour of the stage-based concept. Experts believe that in employer circles there was more acceptance of those points less oriented towards forward-looking vocational training (in particular incorporating new technologies) and more oriented towards using differentiated training to implement a differential remuneration policy for skilled workers in companies.

The conflict brings to light a crucial problem in the restructuring process. It is less a conflict between the trade unions and the employers than a conflict internal to enterprises over the directions to be taken. Among the unions nobody challenged the competence of IG Metall in the field of training in metalworking occupations. The trade union organisations of other economic sectors affected by the restructuration of the metalworking occupations, for example, the chemical industry, entrusted IG Metall not only with conducting negotiations in the restructuring process, but also granted it a free hand in conceptualising and formulating draft plans for the restructuring of training.

Among employers, however, matters were much more complicated: Gesamtmetall had to co-ordinate the interests of a wide range of independent trade associations representing enterprises specialising in very different areas, and with different work structures

and expectations of training. It was only after a long and difficult process that employers were able to achieve a common position. This was complicated by the fear that training in the metalworking sector would become less attractive for young people, and also to the fact that technological change was altering the work process, posing problems with regard to qualifications and training in the metal industry as a whole. Another complicating factor was IG Metall's unwillingness – following trade union congress decisions – to compromise on possible basic concepts for reforming the training regulations. If the employers wanted any kind of training reform, they would have to part with their "model of differentiated training".

Gesamtmetall and IG Metall reached an agreement on 8 November 1978 on the "cornerstones" of vocational training: this amounted to a revision of previously accepted principles. In particular, the skilled worker "qualification" – Section 3, § 4 of the Training Regulations mentioned above – was laid down as the goal of training and was defined as follows (see IG Metall, 1976, p. 148 ff.):

Once qualified the skilled worker must be able to:

- practice the trained occupation in a range of companies and branches of industry and perform related skilled work – if necessary after acquisition of further skills;
- adapt flexibly to new work structures, production methods and technologies with the objective of maintaining the occupational qualification;
- participate in continuing training, further training and retraining in order to guarantee occupational qualification and mobility.

There were different motives in arriving at this common definition of the "skilled worker qualification". Employers wanted a flexible use of personnel within the company and a training scheme that enhanced analytical and planning skills to meet changing internal needs. The trade unions sought increased personal mobility based on improved training to safeguard the livelihood of employees. Both sides nevertheless agreed on a common objective. This constitutes, on the road towards a qualitatively different practice of vocational training, a step as significant as agreement on one-year broad-based pre-vocational training and the semi-amalgamation of the training occupations.

The "specialisation model" incorporating separate interdisciplinary and occupation-specific training stages represented the compromise enabling further work on reforming the training regulations. There were, however, numerous obstacles in the subsequent work by the experts, for example regarding agreement on the definition of training contents corresponding to the training occupations; the removal from the restructuring procedure of occupations originally incorporated within it and the insistence that the new technologies be obligatory for all training occupations and for all companies providing training.

In accordance with its orientation towards basic training, the union initially sought a settlement which avoided specialisation. It wanted to make the "precision fitting", "rough fitting" and "machine-tooling oriented" occupational fields the basis for creating new occupations with broad common occupational training. The employers considered specialisation in the occupational profiles to be necessary, however. They wanted the

level of specialisation and the occupational skills of trainees sufficiently differentiated to ensure higher transferability of occupational qualifications than is the case in broadly based training occupations (Gesamtmetall, 1983, p. 133 ff.).

Although the employers intended to re-tailor the occupations in this way, they initially stuck to training in branch-oriented single occupations. Both specialist competence and occupational flexibility could be combined under the Specialisation Model.

Accepting the compromise of the Specialisation Model was necessary, according to Gesamtmetall, to have the number of "final profiles (*i.e.* final qualifications)" and the three-and-a-half-year length of training accepted, "to guarantee the depth of specialist knowledge needed for the final qualifications agreed upon" (Geer and Bartel, 1984, p. 40). The argument used clearly shows how even today different views subsist about the new training occupations as expressed in different interpretations and choice of terminology. Trade union publications mention, for example, "occupations with specialisation areas and occupational profiles" and thereby indirectly emphasize the basic occupation as the key principle in the Specialisation Model, employers' publications speak of "vocational qualifications, named specialisations" or "independent qualifications which, grouped, lead to training occupations". As such, contrary to the intentions of the trade unions and also in apparent contradiction with the definition of the training contents in the core curricula for training occupations, specialisation becomes the goal of training, on the basis of which the training contract is concluded and training carried out. These continuing differences of opinion between the social partners suggest that dispute over interpretation of the Specialisation Model will accompany the practical application of the new training regulations in companies as will the question of the training method, which the training regulations inevitably leave unanswered. However, the trade union sees the new concept of qualifications, which stresses independence, as compelling fundamental revision of in-company training practice; that, too, was the opinion of the expert discussions, indicating that there will be further dispute in implementing the new regulations in companies.

This section concludes with a more detailed look at the work of the Federal Institute for Vocational Training (BIBB) and the procedures for deciding on regulations governing on-the-job training in companies and core curricula for vocational schools.

In the case of the metalworking occupations, the BIBB had an advisory and co-ordinating function while also setting frameworks for decision making and promoting consensus. The ambitious reform goals in this particularly complex occupational field required enormous scientific effort. The BIBB undertook theoretical and methodological preparatory work and extensive empirical surveys, an effort which – except in the case of the electrical engineering occupations – was not repeated in other restructuring procedures. With regard to the process of reforming the training regulations as a whole, BIBB's work in restructuring the metalworking occupations was quite exceptional. BIBB prepared concepts for drafting the training regulations, in particular by using a so-called "actual situation analysis" of training contents and descriptions of jobs and qualifications to survey current job requirements and identifiable future developments in qualification profiles over a whole range of companies (Buschhaus and Gärtner, 1985). The experts agree that the reform could not have been implemented without the research findings on the training regulations. They therefore emphasize the impact of this work on the

decision-making processes in the restructuring procedure. In addition they point to the BIBB's difficult position in the process of restructuring the metalworking occupations, characterising it as "being caught in the cross-fire". This is not surprising, as both employers and unions are represented alongside the federal government and *Länder* on the Institute's panels to determine research policy.

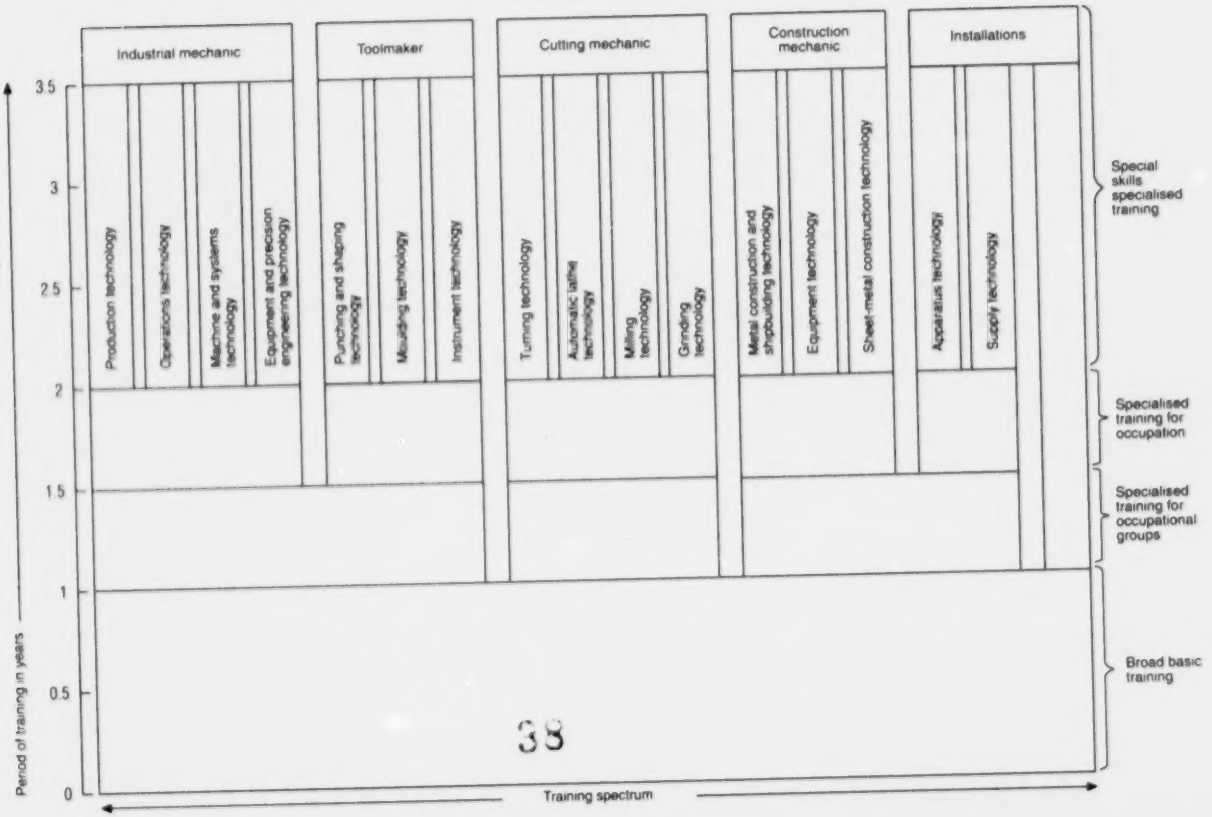
BIBB's analytical tools – especially those for describing jobs and qualifications – were not spared criticism. It is often argued, for example, that they are not suited to a farsighted restructuring of vocational training because they only focus on the immediate demands of the workplace. Also the job analysis is criticised as illustrating the hierarchical structure of the organisation of work in the company, reproducing the existing structure of occupational profiles (Brater, 1983). Whatever is expected of the BIBB's research on training regulations, it is important to realise that the content of the work is strongly influenced by the demands of non-scientific organisations.

Harmonization between the core curricula of the vocational schools and the training regulations for companies, which were drawn up in parallel, was formally agreed in the so-called Findings Report (*Ergebnisprotokoll*) of 1972 between the federal government and the *Länder*. This accord constituted a first in the history of vocational training. Thus, when the metal occupations were restructured, experts on both sides were informed about each others' activities and they co-ordinated their action in joint consultations. In spite of this, the restructuring procedure has been criticised for supposedly neglecting the interests of education establishments and being dominated by the social partners (Grüner, 1980). Whether or not this criticism is justified is not a matter to be resolved here. Even the experts feel that the response depends on the point of view from which the assessment is made. Insofar as criticism is an expression of uneasiness about a development that leads to a relative loss of importance of vocational schools within the dual system of vocational training (Stratmann et Schlösser, 1990), one should ask whether it is possible at all to stem this process, let alone reverse it through improved harmonization of training regulations and core curricula. Further, one might also ask what sort of agreements for harmonization would be likely to achieve the declared goal, given the divergent didactic approaches that structure training in vocational schools and in companies (Pampus and Benner, 1988).

Structure and content of the restructured occupations

Thirty-seven industrial metalworking occupations were restructured and grouped into six occupations with seventeen areas of specialisation (see Figure 2). The way in which occupations and areas of specialisation are described should in itself reflect the new character of the restructured occupations. The term "mechanic" replaces those of "fitter" and "maker" which referred to the craft origins of the old occupations. Similarly, the new nomenclature expresses the relationship between the areas of specialisation and technology. The two-year training occupations were not included in the reform nor were several "peripheral occupations" in the metalworking industry such as pattern fitter, fusion welder and universal hardener, which, it was decided, were to be revised in a later restructuring procedure.

Figure 2. **Structure and content of the restructured occupations**



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The reorganisation did not aim at single occupations, but rather fields of technology; it substituted highly specialised mono-occupations oriented towards single activities with occupations of broad qualification profiles. This structure of training occupations modelled on the concept of the basic occupation, is counter-balanced by the principle of specialisation and the areas of specialisation laid out in it. Nevertheless, assigning the old occupations to the new areas of specialisation is not straightforward. Since the new occupations relate to fields of technology, they do not necessarily coincide.

The new occupational structure is characterised by a three-and-a-half year training period for every occupation with progressive specialisation from basic training, to specialised training, to specific training in the specialised field. The one-year basic training is identical for all metalworking occupations. It leaves time for going into training material in depth and allows companies to set priorities according to their needs. This first year serves as a basis for subsequent specialised training. With the exception of cutting mechanic and motor vehicle mechanic (which has remained largely a mono-occupation), it deals initially with material related to an occupational group, *i.e.* it incorporates training contents of allied training occupations. Only after this stage does the training become more specialised and directly related to the individual occupation. At least in the first one-and-a-half years, there is enough opportunity for trainees to change their training occupation within an occupational group without the duration of their training being prolonged.

Separation into areas of specialisation does not take place until the third year of training. From this point onwards, trainees should be able to acquire the "necessary work experience" through special projects. According to Section 1, § 2 of the Vocational Training Act (BBIG), this is to be gained during vocational training. Specialisation thus extends and consolidates the contents of earlier training and also facilitates specialisation in a particular field which conditions access to employment. If at this point, however, the new training structures were analysed in detail, it could be shown that training is interdisciplinary to some extent in this stage of training too, because some elements are identical for different areas of specialisation.

The changes in occupational structure have far-reaching consequences regarding the programme of specialised contents, an issue covered in the regulations and laid down in the training occupation profiles in terms of minimum requirements (see § 4-9). The core curriculum indicates the logical and chronological order for training the specialised contents. Some obsolete elements have been dropped from the training regulations and many new aspects have been incorporated. Specialised contents corresponding to individual occupations have now become part of different occupations and areas of specialisation. Compared to the old training occupations, there has been a notable shift in the new training occupations from training of manual skills to training in state-of-the-art technologies.

This had long been training practice in some companies where there was a demand for corresponding qualifications (Schlösser *et al.*, 1989). The new regulations stipulate that, qualifications in, for example, CNC technology, control technology and information technology must be a compulsory element of training, with the degree of depth depending on the focus of the future job. Another innovation in the metalworking occupations was

to make the teaching of basic electronics and hydraulics/pneumatics obligatory. As the contents of training are stipulated as minimum requirements, companies can only diverge from the prescribed teaching order by varying the timetabling. This is only possible to a limited extent; the company must argue that specific factors make this necessary (see Section 10 of the Regulations).

The concept of qualifications serve as the basis for the provisions of the restructuring process (see Section 3, § 4). This concept is as significant for the evaluation of the restructuring process as are the new specialised contents and the new delineation of occupations.

The stipulation that tomorrow's skilled workers be trained and qualified to "plan, execute and assess" their work "independently" is inspired by concepts developed by industrial sociologists such as "extrafunctional skills" and "inter-disciplinary qualifications", qualities acknowledged as being increasingly important among work qualifications. Moreover, the notion of "independence" was central to the discussion in the 1970s on "key qualifications", these being considered in a slightly different way (Mertens, 1988). Whereas the issue of "key qualifications" was initially invoked to harmonize the training system with the labour market to achieve greater flexibility, the new concept of qualifications exposes the danger of a gap between initial vocational training and later employment. In-company vocational training is supposed to prepare trainees to cope with changes in the labour market, help them master new technological and organisational demands and prepare them for further and continuing training. Emphasising "independence" as a compulsory component of qualifications (and one that can be verified) should help to maximise flexibility and foster rapid adjustment of knowledge and skills in changing occupational situations (Stössel, 1986).

Reform of training and learning organisation

Trainers and vocational school practitioners played a decisive role in the further development of the didactic and methodological structure of vocational training in the metalworking industry. The main impetus for modernising training methods came from a preparatory study conducted by Wiemann at a vocational school in Salzgitter of a project-oriented action model in basic vocational training (Wiemann, 1974). The so-called "Steam Engine Model", developed by company trainers at Daimler-Benz in Gaggenau, was also significant. These didactic approaches were incorporated into various experimental vocational training projects at BMBW (Schmidt-Hackenberg *et al.*, 1989).

Despite the diversity of reform projects, there are similarities regarding the didactic and methodological approach to training:

- the strong external control of the training process in traditional on-the-job vocational training in enterprises must diminish in favour of self-regulated learning processes to make allowance for the training objective "independence";
- narrow, fact-based and detached teaching and drilling of masses of skills are to be replaced by a qualification process leading to wide-ranging competence in the sense of reflective, purposeful and responsible activity;

- differentiation and personalisation of training are to be made easier in the new approaches so that different learning requirements can be taken into account;
- the new methods encourage trainees' interaction, co-operation and teamwork skills in different group settings;
- the new approaches argue in favour of the availability of a wide range of written material and audio-visual and other media in contrast to the one-track and operation-oriented teaching aids of traditional vocational training;
- they attempt to break down the disciplinarian nature of tests by seeing that testing by trainers is complemented by self-assessment.

By incorporating these features, the experimental projects occupy a significant place in discussions on implementing the restructured metalworking occupations in companies. However, since these pilot projects are mostly in large enterprises and planned accordingly, it is questionable whether they could be transferred to small- and medium-sized enterprises. The motive for these pilot projects in large enterprises was in each case the search for substitutes to training in the workplace while avoiding the disadvantages of classroom-type instruction. In this respect, the results of the experimental models might also be of great importance for small- and medium-sized companies. The introduction of new technologies, with their consequences for the organisation of work in this sector, will also further reduce the opportunities for training in the workplace. In addition, other factors such as the different levels of schooling of trainees and growing training costs will prompt a modernisation of training. Present solutions presumably lie in the adaptation of *Leittexts* and project methods for training in the workplace (Lemke, 1989). The integration of tasks at the various training sites – the enterprises, vocational schools and extra-plant training centres – through didactical and methodological co-operation between sites also promises to take into account the specific training needs of small-and medium-sized enterprises (Pätzold, 1989). The objective is a didactic pluralism binding together the specific capacities and didactic profiles of different training venues in such a way as to give rise to a training structure which is as comprehensive (holistic) as possible. The traditional teaching method will, however, remain as a form of organisation. The introduction to specialised contents such as hydraulics, pneumatics, CNC- and electrotechnology will, for organisational purposes, have to be presented in the form of courses. However, it seems that times have changed and the course-model no longer has a monopoly on vocational training in the metalworking industry.

The changing role of trainers is another theme in the discussion on implementing the new regulations in companies. Success in implementing the new structure with its "independence"-oriented concept of qualifications and training objectives of "specialised and methodological competence and social skills" can only be achieved if *a)* trainers themselves possess these qualities and *b)* the division of labour among trainers can be reviewed and revised in view of the holistic thrust of the afore-mentioned key qualifications. Highly specialised trainers in isolated course systems teach isolated technical knowledge and skills, but not the practical ability to act, which involves independent planning, execution and self-assessment of one's work (Rische-Braun, 1986).

Analysis of the pilot projects shows a change in trainers' behaviour and comprehension of their role. In addition to individual changes with regard to specialised training

contents and qualifications, the division of labour among trainers and the organisation of training have been questioned. The present position of trainers is particularly significant in implementing the reform of the metalworking occupations.

In summary, here are what seem to be the key points regarding the special role of trainers in the implementation of the reform in companies (Wittwer, 1987):

- In on-the-job training practice in companies, trainers must show consideration for the different educational backgrounds of trainees.
- In future trainers will increasingly be asked to teach qualifications which they do not have and will first have to learn themselves. This applies to new specialised contents as well as to key qualifications such as initiative, independence, etc. The training of trainers takes on a greater significance.
- The separation of training from work leads to trainers becoming detached from technological developments in their occupation. As a result training contents become rapidly outdated. This process must be taken into consideration when implementing the reform; training must be specially organised and methods carefully chosen to cope with this problem.
- Knowledge of teaching skills will be of great importance in future for trainers alongside their specialised qualifications.
- Future trainers will be more like "training counsellors" and their role as "lecturers" will decline in importance.

Implementing these points poses problems and challenges for company training in the metalworking industry, a subject dealt with in the following section.

Institutional problems in implementing and adapting the restructured occupations

The Regulations on Vocational Training in the industrial metalworking occupations became legally binding upon their publication in the Official Federal Gazette in 1987. Expecting difficulties in their implementation, the legislator prescribed a transitional period ending in 1990 and even later in the case of particular training occupations. These transitional regulations were rarely made use of, however. The new training occupations met with a mixed reception from employers after the regulations came into force (Raddatz, 1988.) At least the first years saw a greater than average decline in the number of new traineeships in the industrial metalworking occupations affected by the reform compared with overall trends in new training contracts (Strauss, 1989). It is difficult to say whether this decline was a result of the new regulations. However, important qualitative problem areas will be addressed: the didactic and methodological structure of vocational training; examination practice in the new occupations; and the implementation of the reform in vocational schools.

a) In addition to trainees' final examinations several other areas are mentioned as problematic; these include the continuing training of trainers in terms of specialised contents and teaching skills, the compilation of the curriculum for in-company training, training methods, teaching and training aids, and co-operation with vocational schools (Raddatz, 1988). This clearly indicates that didactic and

methodological aspects are important for implementing the new structure at company level (Friede, 1988). A central question is the extent to which restructuring implies a new kind of learning and the consequences this has for the job of the trainer (Passe-Tietjen and Stiehl, 1985). An evaluation study conducted by BIBB (Grünewald et al; 1989) shows just how far training companies are from the new concept of qualifications. Although 71 per cent of enterprises interviewed wish to change their "spectrum of training venues", only half (51 per cent) already apply new training methods to transmit the contents required by the new training regulations. Of these, 28 per cent employed the project method, 8 per cent used *Leittexts*, and 5 per cent were combining the two approaches. The cause of these didactic and methodological hesitations may lie in the encyclopaedic lists of individual qualifications in the training regulations, ordered according to technical criteria, not educational ones, with no connection to higher training objectives such as independence (Pahl and Schulz, 1989).

However, laying down "independence" as a key qualification offers the possibility of reforming through restructuring and improving the quality of company training. The principle of self-directed activity is conceived as part of the process of realising the goals of equal opportunity, mastery over organisation and technology, and high levels of employee co-determination. The training methods employed to date (based on the course model) have been an obstacle to this process.

Although the concept of key qualifications has become widely accepted in the debate on vocational training, it has been interpreted in many different ways. Some see key qualifications as "extrafunctional" qualifications which are to be imparted in addition to other qualifications. This implies a greater emphasis on the development of personal behavioural patterns, with independence put on a par with traditional specialist qualifications (Bunk and Zedler, 1986). However, this only requires changes in teaching organisation insofar as new methods are needed to teach the key qualification of "independence" while the technical subject matter can continue to be taught by traditional means. Irrespective of the practical problems this procedure poses, it appears questionable from a didactic point of view. It is now widely recognised that key qualifications cannot be taught independently of others.

Other concepts focus on a strong interlinking of technical and personal training objectives and emphasize interweaving technical contents and key qualifications in the spirit of holistic training (Jäger, 1990; Brauchle *et al.*, 1987; Boretty *et al.*, 1988). They propose a complete revision of company training methods and make use of a totally different structure and cataloguing of the key qualifications, leaving their operational aspects in the training process open, however. Further problems can be expected in implementing the reform at this point. The catalogue of key qualifications which is to be developed according to company requirements must meet the demands of the reform regulations and lead to justifiable changes in the organisation of learning. This catalogue should also be didactically feasible, that is, the qualifications should be examinable and the training objectives classifiable.

b) In the past, testing knowledge and skills was central to intermediate and final examinations in the metalworking occupations. However, the orientation towards questions of knowledge, in particular in the "programmed examination procedures" examination method, means that the ability to extrapolate and analyse complex connections, problem-solving and planning strategies are not examined (Staudt, 1985). The goal of using the reform to teach future skilled workers basic knowledge which can be built on and practical competence must also be attained through a different examination procedure and different examination methods. Intermediate and final examinations will in future be regulated in such a way that the examination practice used to date will inevitably have to be changed. Although the legislator refrained from prescribing respective examination procedures, the following minimum requirements have been stipulated:

i) The material to be tested, the maximum time allowable and the weighting of individual topics are laid down for practical and written examinations.

ii) For many metalworking occupations there is a new element of the examination. In contrast to the traditional "piece" the student must present a sample of his work. The procedures followed in preparing the sample are assessed, and the intermediate results can also be evaluated. Assessment scales and examination record sheets are to be developed for this purpose. They can be used for entering observations on-site and thus enable uniform assessments to be made.

iii) The ability to "plan, execute and assess independently" are to be demonstrated in all sections of the examination.

iv) A new subject, "work planning", has been introduced into the written part of examinations in the metalworking occupations. By combining information technology and mathematics to solve technical problems, the regulations clearly stress the need for a close link between the written and practical parts. Experience with intermediate and final examinations thus far has revealed the limitations of the model examination tasks developed by PAL for these purposes (Frackmann and Schild, 1989; Heiking 1989).

c) It is generally recognised that the traditional division of labour between vocational schools and enterprises – *i.e.* between theory and practice – is obsolete. Paradoxically, the widely touted "independent education mandate" of vocational schools remained unfulfilled because companies and extra-plant training centres took over a large part of the theoretical training. In particular, the schools' framework curricula for the restructured metalworking occupations were brought almost completely in line with the training curricula used in the enterprises (Pukas, 1990), so that the role of the vocational schools was generally seen as complementing and taking some of the strain off in-company training – particularly with regard to small- and medium-sized enterprises (Frackmann, 1987).

In the vocational schools, the extent to which students' skill needs will be satisfied and their abilities and maturity developed in both their occupation and in the social context will depend mainly on the commitment of the trainers. This implies a high level of personal competence and a wide capacity for action and reflection in fields including technical communication, the fundamental princi-

ples of electronics, control technology and programming. Methods will also need to be modified in vocational schools. All this points to the need for a new teaching approach in "Metalworking Technology". While there has been no lack of suggestions (Koch, 1986; Stöcker, 1986; Kaerger, 1988; Lipsmeier, 1989), comprehensive concepts have yet to be elaborated (Nashan and Ott, 1990).

3. Synopsis and future challenges facing training in the industrial metalworking occupations

To assess the efforts made to reform training in the metalworking industry, the changes in the training regulations must be viewed separately from those governing in-company training. Training regulations lay important foundations for the technical and teaching quality of in-company training.

When the past and present changes in skilled work in the metalworking sector are considered, it can be confirmed that the results of the training regulations reform have shown a high degree of adaptability. The discussions during the reform process not only reflected the changed occupational and technical requirements with the resultant new forms of work organisation. They also explicitly formulated certain aspects of educational and labour market policy. The definition of the aim of vocational training now encompasses not only technical competence, but occupational flexibility as well.

The reform discussions have led to redesigned and restructured training occupations and training regulations. A redefinition of the industrial electrical occupations and the restructuring of the electrical and metalworking craft trades have followed on from these. They will also serve as a model for the entire restructuring process in the future; they have already provided an example for the commercial occupations to follow.

The new concept of qualification defines independent planning, execution and assessment as the goal of training. This is a further major result of the training regulations reform. In addition, in an important sector of the economy the minimum requirements of the statutory regulations have replaced the voluntary and arbitrary nature of outdated training regulations. Teaching trainees to use occupational knowledge and abilities to solve complex tasks in different situations instead of simply teaching individual skills has now become the minimum requirement of vocational training.

This result would not have been achieved without the obligation to reach agreement, as stipulated in the procedure for reforming the metalworking occupations. Not only did the social partners have to find consensus. So, too, did the experts from the enterprises whom they appointed, whose job it was to fill in the outlines of the reform proposed by the political authorities on the basis of research into the training regulations. One must not underestimate the significance of this accord for the results of the regulatory action.

When assessing the reform, it should not, however, be overlooked that the regulations procedure discussed here took ten years and the procedure for issuing new training regulations in the metalworking and electrical craft trades took almost as long (see

Figure 3 for the timetable of the reform process). What might be considered a disadvantage in terms of time, might be seen as an advantage with regard to the implementation of the reforms. The procedure took so long partly because of the complexity of the subject matter to be regulated, but above all because of the differing and often conflicting interests of the institutions and organisations involved in the training process that had to be reconciled in formulating the new training regulations. This reflects the complex nature of training which is institutionally anchored in the dual system – that is, both in a school and in an enterprise – but in reality has its roots in the enterprises.

The reform debates did not focus on the issue of co-ordination between enterprises and schools. This highlights the situation of the dual system and its value for the training process. The main conflicts, those which delayed the conclusion of the restructuring procedure, were at the enterprise level and, consequently, at the level of the social partners. Further prospects for the reform of training in enterprises have been succinctly expressed by one expert: if the training regulations had been drafted by a small number of experts working in seclusion and presented as a directive from "above", much time would have been saved but their acceptance by the enterprises would have been compromised. This means that although the procedure has taken a long time, it has probably increased the tendency of the enterprises to adapt and be flexible, which, in the final analysis, decides whether or not the training reform is a success.

Since the training regulations are still in the early stages of implementation in enterprises, the assessment will go no further and the conditions of their implementation will be analysed. Reports describing the way in which the new regulations are implemented in the enterprises illustrate the difficulties that threaten the process. In view of the objectives of the reform and the new learning and training methods necessary, one particularly important aspect will be examined here: the teaching qualifications of training personnel.

Although considerable progress has been made in this field – especially since the Vocational Training Act was passed in 1969 – teaching qualifications constitute an important challenge for the success of the reform process. To a greater extent than in the past, further and continuing training courses have to be tailored to specific problems whether these problems be of a didactic nature or whether they result from the organisation of training and the enterprise. The training conditions and the work of the trainers must also be taken into account, and these differ greatly from enterprise to enterprise.

The next section examines other requirements for the development of vocational training in the metalworking industry, focusing on the following issues:

- environmental education and training;
- the shortage of vocational school teachers;
- developments in demand.

The way of coping with these issues in the future will depend on the flexibility and willingness of all those involved in the training process.

Figure 3. **Evolution of the reform in metalworking**

1978	Agreement on the objectives of a reform Gesamtmetall - EG Metall - ZVEI (Entire metalworking industry - German engineering workers' union - Central Association of the Electrical Industry)
1980 1983 1984	Research and development at the BIBB • Analysis of the current situation • Definition of future training contents and structures
End of 1984	Agreement of the cornerstones of the reform IG Metall - Gesamtmetall - ZVEI • Number of occupations • Duration of training • Designation of occupations • Structure of occupations
March 1985	Discussion regarding application with the authority responsible for issuing the regulations (Federal Ministry of Economics)
End of 1986	Procedure for the development and co-ordination of Training regulations (Federal level) Core curricula (*Länder* level)
January 1987	Issue of the training regulations and recommendation of the core curricula
	Training regulations come into force on 1 August 1987

Environmental education and training

In view of the unprecedented destruction of our natural resources, there is now a recognition of the need to intensify environmental education and training and improve the management of resources. Thus, "work safety, environmental protection and the rational use of energy" are included as a theme of training in all new training regulations. There is, however, a great discrepancy between professing to be committed to learning about the environment and its actual importance in vocational education. Where environmental education is provided, it remains restricted to imparting individual specialised qualifications that are directly relevant to the work in question. It does not teach the technical, chemical, biological and ecological interaction between work and the environment in a systematic and goal-oriented way.

Environmental training does not respect the principle of integration (it does not accompany the overall process of teaching knowledge and skills) and it neglects various didactic principles such as the relationship with experience, emotions and project work (Nitschke, 1989). Despite a few noteworthy attempts, more research and development is needed if environmental education is to be successful.

The shortage of vocational school teachers

The Conference of Ministers of Education and Cultural Affairs, the North Rhine-Westphalian Association of Trade School Teachers (*Gewerbelehrerverband NW*) and the Committee on the German Economy (*Kuratorium der deutschen Wirtschaft*) have made forecasts of a serious shortage of teachers for trade and technical vocational schools in the early 1990s (Bader, 1990; Weber, 1990; Jost, 1990). This development, which endangers the survival of the dual system (Stratmann, 1991), already jeopardises the efforts of the vocational schools to ensure a higher number of teaching hours for the restructured training occupations.

Short-term solutions for recruiting teachers are not even in sight because of the labour market competition for students who have specialised in mechanical engineering. Transferring teachers from other (non-occupational) subjects to vocational schools would not solve the problem either since they would require extensive technical and scientific training. Mechanical engineering graduates from specialised institutes of higher education might be an alternative. Diplomas from specialised institutes of higher education have already been formally recognised as university entrance qualifications, but so far no systematic attempt has been made to encourage candidates from this group (who normally have practical experience in enterprises as well) to qualify for vocational teachering.

The development and extension of attractive (university) programmes will be needed to solve this problem (Bonz, 1991). The German Society of Education (*Deutsche Gesellschaft für Erziehungswissenschaft*) made a similar proposal demanding that the organisation of academic training for vocational school teachers be completely revised and that diploma programmes based on those for the trade schools be set up. Such a reform of teacher training would enhance the status of the vocational school as a centre of learning and increase its flexibility. This would help strengthen the dual system of vocational training as a whole.

Developments in demand in the 1990s

The demand for training places in 1990 showed an uneven development and varied greatly depending on the occupational field and the sector. Although building and building-related occupations showed an increase of 2.9 per cent, the demand for occupations in the commercial and administrative sectors showed an above-average decline (BMBW, Annual, 1991). The demand for training places in the new metalworking occupations remained virtually unchanged compared with 1989 (–0.9 per cent). Nevertheless, the demand here is slowly but surely lagging behind what the enterprises can offer. This is the case for cutting mechanics in particular, while the situation is more varied for industrial mechanics. The figures for those specialising in machine and systems technology remained virtually unchanged. In comparison, the number of newly concluded training contracts for apprentices specialising in production technology and operations technology dropped respectively by –12.4 per cent and –18.5 per cent.

In the coming years, demographic trends in Germany will reduce the number of applicants to 600 000. If this trend continues, the metalworking occupations will be seriously affected. Metalworking occupations present the unfavourable supply and demand ratio of 126.8 and rank after occupations in the food industry (181.3), building and building-related occupations (148.9), housekeeping and cleaning occupations (134.3) and textile-clothing and leather occupations (128.6). If in addition to the above dilemma, the trend of less qualified applicants continues, it will become increasingly difficult to recruit enough skilled workers with the necessary qualifications for the metalworking industry. This will also put higher demands on the efficiency of training departments to reduce the number of dropouts and increase the success rate of training. It is doubtful, of course, whether this problem can be solved merely by making training more flexible and adaptable. If changes in the number and the quality of trainees are interpreted as the outcome of higher occupational expectations of young people with increasingly higher qualifications, the alternative is to improve the status of industrial skilled work. The way to achieve this will be through measures affecting work organisation and salaries as well as further and continuing training, to enhance skilled worker's career opportunities (Lutz, 1990).

B. The example of the building trade

by

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The Crafts Code of 1953 sets out the conditions for practising a trade. It differentiates between occupations recognised as being within the main building trade (*e.g.* bricklayer, joiner/cabinet maker, roofer, road builder) and those in the building finishing trade (*e.g.* tiler, composite floor layer, stonemason, painter and varnisher).

According to the latest documents of the Federal Labour Office (Bundesanstalt für Arbeit, 1991), there are now 35 recognised building occupations, including the modifications of 1992. This nomenclature takes into account the particular heterogeneity of building activities in terms of the size of businesses, production structures, available technology and the way in which the workforce is employed (Syben, 1991*a*). In 1989, 77 000 young people underwent initial vocational training. This represented 8 per cent of the total workforce in the building trade at that time. The distribution of the trainees in the most important building trade occupational groups was as follows:

- civil Engineering with seven training occupations accounting for 7 per cent of trainees;
- construction with four training occupations accounting for 25 per cent of trainees;
- finishing with 14 training occupations accounting for 62 per cent of trainees;
- stonemasonry, production of building materials and inspection of building materials with nine training occupations accounting for 6 per cent of trainees.

Eighty per cent of on-the-job training takes place in the craft trade sector (see Figure 4); this is traditional in the building industry.

Since the introduction of the Working Regulation in 1935, the occupation of bricklayer for example has been restricted to men by law. However, more and more women are receiving initial vocational training as stonemasons (25 per cent) and as building materials inspectors (20 per cent); women can also be found in finishing occupations such as painting and varnishing (10 per cent) and glazing (10 per cent). The most common school

Figure 4. **Number of trainees in building occupations**

(stage-based training)

Year*	Craft trade		Industry	Total	Change compared to previous year in per cent
1965	41 026		5 276	46 302	
1966	43 936		5 718	49 654	+7.2
1967	43 026		5 435	48 461	–2.4
1968	38 500	only	4 809	43 309	–10.6
1969	33 023		3 135	36 158	–16.5
1970	25 031	in 1st	3 184	28 215	–22.0
1971	22 826		2 086	25 812	–8.5
1972	21 8[illegible]3	year**	2 360	24 693	–4.3
1973	26 032		3 074	29 106	+17.9
1974	30 012		3 429	33 411	+14.8
1975	31 711		3 856	35 567	+6.5
1976	31 185		3 918	35 103	–1.3
1977	35 626		4 942	40 568	+15.6
1978	44 584		6 626	51 210	+26.2
1979	50 420		7 799	58 219	+13.7
1980	58 273	16 449	9 689	67 962	+16.7
1981	62 594	16 422	10 561	73 155	+7.6
1982	61 174	13 709	11 005	72 179	–1.3
1983	57 278	12 494	11 306	68 584	–5.0
1984	56 313	15 474	12 418	68 731	+0.2
1985	56 111	14 345	12 847	68 958	+0.3
1986	51 031	9 711	12 090	63 121	–8.4
1987	41 035	8 031	10 443	51 478	–19.1
1988	31 791	7 509	9 036	40 827	–20.7
1989	27 818	7 361	8 347	36 165	–11.4
1990	27 320	8 230	7 860	35 180	–2.8
1991	27 888	8 572	7 580	35 468	+0.8

* Status: January of the respective year.

** Note: Wholly school-based pre-vocational training year in Bavaria and Lower Saxony. Consequently, no statistics included on first-year trainees from these *Länder*.

Source: Lehrlingsrolle der Handwerkskammern und der Industrie- und Handelskammern (Apprenticeship regulation by the chamber of handicrafts and the chambers of industry and commerce).

qualification of trainees is a lower secondary school-leaving certificate. Training usually takes three years, except in the cases of the finishing trades of scaffolder and adhesion insulator for which training only takes two years.

Introduced in 1974, stage-based training to become a skilled structural or civil engineering worker or a finishing worker (Stage I), can be completed in two years. However, in practice this is rarely the case since nearly all trainees opt for one of the 14 advanced training occupations in which they can qualify as a specialised skilled worker (Stage II) after completing a further training year in one of the three fields of civil or structural engineering or finishing (see Figure 5). A special feature of stage-based training in the building industry is that the dual system of vocational training is supple-

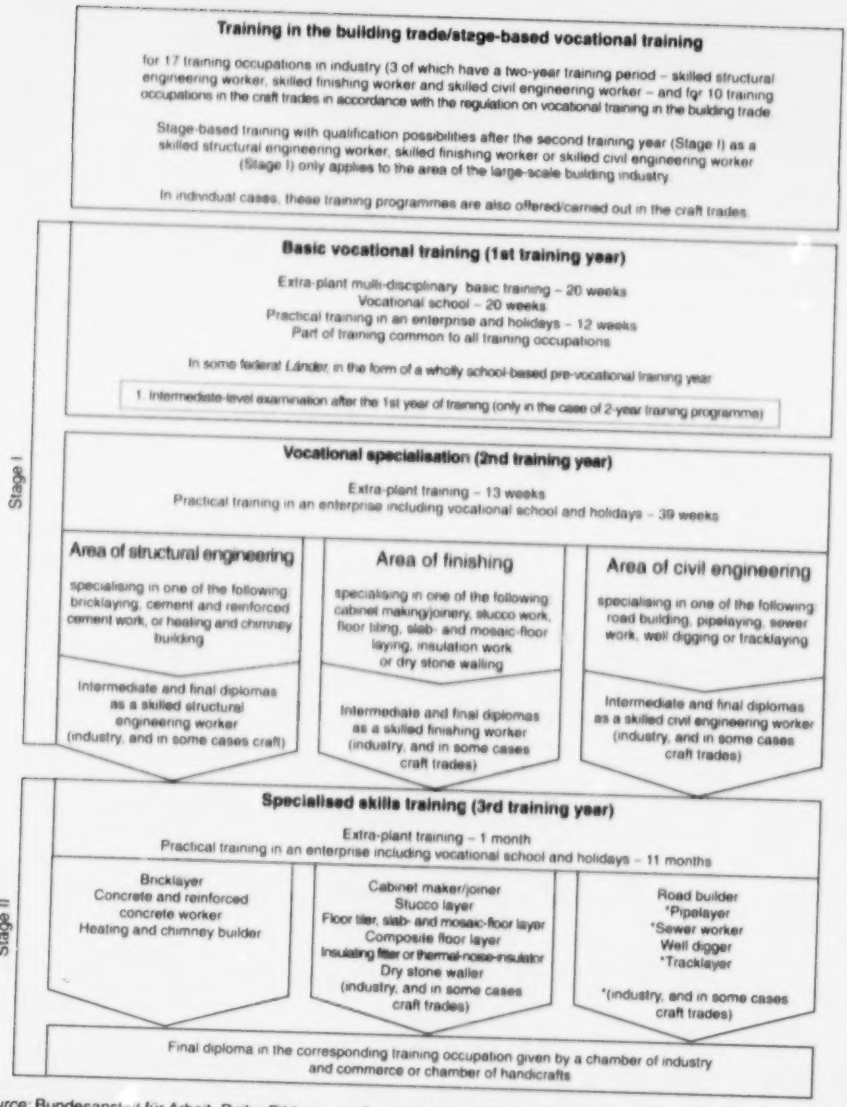
mented by a high percentage of extra-plant training and related occupations during the first year of extra-plant basic training follow a common curriculum. There are 20 weeks of extra-plant training in the first year (basic training), 13 weeks in the second year (specialisation) and four weeks in the third year (special skills training) (see Figure 5). A good 50 per cent of trainees in the building trade receive stage-based training. The training programmes in civil and structural engineering are exclusively stage-based. Only 34 per cent of trainees in the finishing trades undergo stage-based training, however. Stonemasonry, building materials production and building materials inspection have not been integrated and are still taught in the traditional manner without reference to other occupations.

Nevertheless, the extra-plant training elements were reinforced in the new regulations, notably in the following occupations: roofer (1981), concrete components and terrazzo maker (1985), stonemason, scaffolder (1991), construction machinery operator (1991), and process and dressing mechanic working in the rock, stone and related mineral products industry (1992). The occupation of the construction machinery operator is based on the construction machinery driver as practised in former East Germany and is one of the few training occupations that was adopted by the German system of vocational training. Thus the principle of extra-plant training segments has been established in most occupations in the building trade. The amount of extra-plant training is generally well below that of stage-based training, however.

With reference to the general structure of qualifications of commercial and technical personnel in the building trade, it can be seen that 54 per cent of employees have completed a vocational training programme in a building or related trade (*e.g.* joinery). However, the proportion of trained personnel is unevenly distributed among the different building trades. The highest percentages of skilled workers are to be found among bricklayers (86 per cent) and joiners/cabinet makers (75 per cent). Conversely, only 10 per cent of road construction and civil engineering workers are skilled (BMBW, Annual, 1991), and an estimated 30 per cent of workers in the building materials and the rock, stone and related mineral products industries are thought to be skilled (IG BSE, 1989). It is important to note, however, that in the past, ''with the exception of machine operators (metalworking and electrical occupations)'' there were no specific training regulations in the building materials industry at all. It was only in 1992 that the situation drastically changed with the introduction in the rock, stone and related mineral products industry of the occupations of process mechanic (specialising in building materials, ready-mixed concrete, plasterboards/fibrous cement or sand-limestone/porous cement) and dressing mechanic (specialising in natural stone, fireproof and ceramic materials, sand and shingle, coal) (Adams, 1992).

According to a survey conducted by the Institute for Research into the Labour Market and Occupations (*Institut für Arbeitsmarkt- und Berufsforschung, IAB*), 39 per cent of workers in the building trade are employed as semi-skilled or unskilled workers. Only a very small percentage of these workers have undergone vocational training. A mere 12 per cent of bricklayers have undergone vocational training, whereas 60 per cent of road construction, civil engineering and building materials industry workers have completed vocational training.

Figure 5. **Stage-based training**


Training in the building trade/stage-based vocational training
for 17 training occupations in industry (3 of which have a two-year training period – skilled structural engineering worker, skilled finishing worker and skilled civil engineering worker – and for 10 training occupations in the craft trades in accordance with the regulation on vocational training in the building trade
Stage-based training with qualification possibilities after the second training year (Stage I) as a skilled structural engineering worker, skilled finishing worker or skilled civil engineering worker (Stage I) only applies to the area of the large-scale building industry
In individual cases, these training programmes are also offered/carried out in the craft trades
Basic vocational training (1st training year)
Extra-plant multi-disciplinary basic training – 20 weeks
Vocational school – 20 weeks
Practical training in an enterprise and holidays – 12 weeks
Part of training common to all training occupations
In some federal Länder, in the form of a wholly school-based pre-vocational training year
1. intermediate-level examination after the 1st year of training (only in the case of 2-year training programme)
Stage I
Vocational specialisation (2nd training year)
Extra-plant training – 13 weeks
Practical training in an enterprise including vocational school and holidays – 39 weeks
Area of structural engineering
specialising in one of the following: bricklaying, cement and reinforced cement work, or heating and chimney building
Intermediate and final diplomas as a skilled structural engineering worker (industry, and in some cases craft)
Area of finishing
specialising in one of the following: cabinet making/joinery, stucco work, floor tiling, slab- and mosaic-floor laying, insulation work or dry stone walling
Intermediate and final diplomas as a skilled finishing worker (industry, and in some cases craft trades)
Area of civil engineering
specialising in one of the following: road building, pipelaying, sewer work, well digging or tracklaying
Intermediate and final diplomas as a skilled civil engineering worker (industry, and in some cases craft trades)
Stage II
Specialised skills training (3rd training year)
Extra-plant training – 1 month
Practical training in an enterprise including vocational school and holidays – 11 months
Bricklayer
Concrete and reinforced concrete worker
Heating and chimney builder
Cabinet maker/joiner
Stucco layer
Floor tiler, slab- and mosaic-floor layer
Composite floor layer
Insulating fitter or thermal-noise-insulator
Dry stone waller
(industry, and in some cases craft trades)
Road builder
*Pipelayer
*Sewer worker
Well digger
*Tracklayer
*(industry, and in some cases craft trades)
Final diploma in the corresponding training occupation given by a chamber of industry and commerce or chamber of handicrafts

Source: Bundesanstalt für Arbeit, Reihe Bildung und Beruf (Federal Ministry of Labour, Vocational Training Division) Nuremburg 1991.

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When one compares the age distribution of those employed in the building trade – older workers predominate – with the emerging shortage of skilled workers, one can see that not only the skilled workers, but also the semi-skilled workers have more experience than average, which could be exploited for further and continuing vocational training purposes. The following opportunities exist for initial, further and continuing training in the building industry: skilled worker, foreman, site foreman (a skilled worker with additional training), certified site foreman (equivalent to a master craftsman), master craftsman and technician (Bundesanstalt für Arbeit, 1989). Several years of qualified experience is recognised as equivalent to vocational training when applying for further and continuing training to become a group leader, site foreman or master craftsman. This has an historical precedent: When in the 1970s there was a slump similar to that experienced today in recruiting potential skilled workers (see Figure 4 of the Annex), semi-skilled labourers were given the opportunity to gain recognition as higher grade skilled construction workers as long as they could prove (in an interview with an expert) that they had successfully completed at least six years' work as a bricklayer or joiner. Similarly, advertisements were published in 1985 to inform construction workers of the possibility of becoming a "certified scaffolder" through 120 hours of continuing training. What was special about this offer was that for the first time ever, a collective agreement ensured that a continuing training programme was paid for from the social funds of the building trade. In the following years over 1 200 workers took advantage of this opportunity, a figure representing 9 per cent of the workforce in the building trade (Adams, 1991).

1. The historical context

Distinctive structural features of the building trade

The most obvious structural feature of the building trade is the dominance of small handicraft businesses. Approximately three-quarters to four-fifths of all building firms have fewer than 20 employees and can therefore be classed as small businesses. For the last century the number of businesses in the building trade on the territory of the former Federal Republic of Germany has been stable at 60 000. Nearly a quarter of these have more than 20 employees and can therefore be classified as belonging to the large-scale building industry. However, the number of large-scale companies is rapidly diminishing. Only 1 per cent of all businesses have more than 500 employees. What is surprising about this structure is its durability. Even before the Second World War this structure prevailed in the sector. In fact, the number of small businesses has slightly increased since 1950, whilst medium- and large-scale businesses have, if anything, seen a decrease since the 1970s (Plumpe, 1989).

In the structural engineering branch, for example, large- and medium-sized enterprise are in direct competition when it comes to constructing technically demanding concrete buildings. Small- and medium-sized enterprises mainly divide between them the sector of the market involving technically simpler or conventional construction. Special-

ised firms for facade construction or pre-fabricated housing and sub-contractor work like plastering, jointing/pointing or demolition companies are similarly structured (Syben, 1991*b*). The difference between the building trade and the building industry lies not only in the size of a business but also in the particular work undertaken by each.

It would be wrong to deduce from this that small-and medium-sized enterprises fare best in the building sector. The influence and strength of the few large corporations is too great for this and the chances of survival of many small- and medium-sized businesses too slight. The building trade traditionally has the highest number of bankruptcies – the bankrupt small businesses are replaced not by large companies, but by small ones (Plumpe, 1989, p. 366).

This unstable structure, a characteristic feature of the building trade, is due mainly to two factors:

- Firstly, the building industry is extremely dependent on the domestic economy. The cyclical behaviour of domestic demand, public or private, largely determines economic up- and downturns. Small businesses in particular rely for their survival on the State to promote housing construction since 40 to 50 per cent of the building trade's total production comes from housing construction. For this reason, the abolition in the 1980s of the nonprofit-making nature of social housing (Smits, 1991) had a serious effect on the building industry.
- Secondly, individual businesses have only a limited ability to survive economic downturns because of their limited capital resources. When compared with the average in industry as a whole, the building trade lags 60 per cent behind the others. A similar statement can be made in respect of the average rate of capacity utilisation in the building enterprises (Plumpe, 1989; Streeck, 1983).

Given these risks, it is worth asking why, when comparing countries, (West) German small businesses in the building trade are not only able to maintain their dominant position but are also able to extend it – unlike small building enterprises in Finland, for example. The answer may lie in the fact that in a country as densely but still comparatively decentrally settled and industrialised as Germany, small- and medium-sized businesses are logistically superior in many marked segments through their geographical "omnipresence" as small and flexible production units.

The number employed in the building trade in West Germany decreased in the last decade from 1.26 million to 970 000 (IG BSE, 1989). Due to the shortage of trainees, the number of training enterprises also dropped from over 27 000 in 1979 to only 12 911 in 1990 (IG BSE, 1990). This means that less than 20 per cent of building companies provide training today.

This dearth of skilled workers, comparable with that of the 1960s, raises two basic structural problems in personnel management in the building trade:

- Over the last few decades, recruiting trainees for occupations in the building trade has only been relatively easy when training programmes in other business sectors have been filled. This was the case for a short time after the Second World War and also between 1973 and 1985 (Steeck, 1983 and Figure 4 in the Annex). According to the estimation by different building trade associations, 10 trainees

per 100 skilled workers are needed to ensure that there is enough skilled labour in the future. Just as in the late 1960s, this percentage has not been reached since the mid-1980s.

- A large percentage of persons who undergo training in the building trade change branches sooner or later and end up either in industry or in the public service (for instance in the transport sector). In 1985 and 1986 this was the case for 34 per cent of all German workers who had undergone training in a building occupation (BMBW, Annual, 1991).

A representative survey has shown that this strong trend to migrate from the building trade has largely to do with its health hazards and high job insecurity (related to its seasonal nature). A further factor contributing to this trend is that the gross annual income of a building worker is about DM 7 000 (US$ 4 000) less, due to inclement weather, than that of an industrial worker, even after supplementary benefits are paid from the social funds system) into account (IG BSE, 1989). This trend is confirmed also in large-scale industry. These factors negatively influence the propensity of workers to start a career in the building trade.

Increasing the attractiveness and the quality of initial vocational training are not the only factors of importance to survival of the building trade. Providing existing employees with internal opportunities for further and continuing training is also important because only a limited number of qualified workers can be gained from the external labour market to replace those who leave. Not only is there a growing shortage of skilled workers; middle management and executive personnel are also in high demand. The building trade therefore estimates that in 1995 the demand for young skilled workers will be triple the number available. Apart from this, the age distribution in the building trade compares unfavourably with that of other branches of industry: 60 per cent of all foremen and master craftsmen are over age 50 and it is estimated that by the year 2000 more than 300 000 workers will have reached pensionable age.

Changes in skilled work and the crisis in vocational training

Competition is no longer simply a question of price, but increasingly a question of meeting deadlines, upgraded technical and particularly ecological solutions, quality of work and extended customer-oriented services: the building trade too has been drawn into new, working practices. Consequently, the ability to maintain performance standards is increasingly dependent on the active co-operation of employees (Syben, 1991*a*). Furthermore, performance-related demands have been changed greatly by the introduction of new materials (such as plastics), the use of electronic devices and machines, revised logistic concepts, and not least by a growing awareness of environmental issues. As a result, both core and cross-sectional qualifications are gaining in importance over traditional and highly specialised mono-occupations since they promote the ability to work in interdisciplinary groups, to carry out independent problem solving and show an ongoing propensity to participate in continuing training. "The bricklayer who exclusively lays bricks – as used to be the case – is a rarity nowadays" (Schubert, 1989). Presently, he

must also be prepared among other things to do plastering, lay boards, handle cement and reinforced cement properly and fit pre-fabricated parts. In the course of his duties he may on occasion even be required to operate and service a compressor or a concrete pump.

These extra duties are not the sole reason for changed skill demands. Structural changes in the type of work in the building trade have also had an effect: While the number of new building contracts between 1972 and 1986 fell from 74 per cent to 52 per cent of the sum total of building work, maintenance expenditure rose from 28 per cent to 48 per cent in the fields of the environment, transport networks, energy- and water supply and also in house-building (see report by the Economic Research Institute, IFO, entitled *Baubedarf bis zum Jahr 2000* – "Building needs until the year 2000"). This increases the need to restructure occupational profiles, open new routes for continuing vocational training and, where necessary, define new occupational profiles. The regulations introduced in 1987 governing further training in restoration in the bricklaying, painting, stucco-laying and joiner/cabinet-making craft trades (Adams, 1989) as well as in the new occupations of scaffolder, and construction machinery operator are important references for the future. In the course of this change, some traditional semi-skilled jobs have been upgraded as a result of these increased requirements. The introduction of the occupations of process mechanic and dressing mechanic in the rock, stone and related mineral materials industry in 1992 are also examples of this trend to upgrade (IG BSE, 1989). The deployment of semi-skilled or unskilled labour in the building trade has, if anything, decreased in the last 20 years (Schubert, 1989).

In summary, the afore-mentioned changes in the qualification requirements in the building trade, have not only altered the structure of skilled work but skilled work itself has also become far more important. Stage-based vocational training, introduced in 1974, constituted an answer to the crisis of the entire building trade in the late 1960s. The following section recapitulates the historical context of its development.

The quick and successful completion of the vocational training reform in the building trade is mainly due to a situation which threatened the building trade in the late 1960s and early 1970s: the shortage of young people who were prepared to learn a building occupation. At its lowest point, in 1972, the number of trainees in the building trade was only 24 700. This represented a halving of trainees from 7.3 per cent of all employed in the building trade in 1960 to 3.1 per cent in 1970/71 (see Figure 4 in the Annex). As such, the decline in training in the building trade was more severe than in other sectors. The occupation of bricklayer, for example, the most popular training occupation for men in 1955, had fallen to 15th position by 1970.

The building industry made an early start in trying to solve the problem of a shortage of skilled workers. Strategies employed in the early 1970s to increase the attractiveness of building work included a sector-specific social policy (involving social funds) and higher-than-average pay rises. In addition, there was agreement among the social partners in the wage settlements of the late 1960s that reform of the outdated vocational training system would be an important step towards enhancing the status of building work. The starting point for this was the recognition that very few companies were in a position "to impart all of the knowledge and skills laid down in the regulations governing vocational training" (Köbele, 1983) due to the generally small business

structure of the sector and the high degree of specialisation in the building trade. Shifting parts of vocational training to extra-plant training centres was a key outcome of the negotiations on vocational training reform. These discussions took place between the various associations of the building sector after the Vocational Training Act came into effect in 1969.

2. Reform concepts, regulatory problems and the capacity of institutions to adapt: stage-based vocational training

Historical precursors of stage-based vocational training: extra-plant training building sites, funding through taxes and sector-specific social funds

Vocational training models were introduced in the building industry as early as the 1920s to try and counteract the training problems specific to the building sector. Even at that time it was recognised that there were limitations in the efficiency of a purely in-house vocational training scheme. The introduction of reinforced concrete technology around the turn of the century forced the building industry to set about trying to solve the problem of vocational training itself. In 1927 the Rhineland and Westphalian section of the Cement and Civil Engineering Employers' Association founded the first "training building site". This training building site was to be used to instruct trainees from various companies in special training units in the different skills and techniques that might crop up only rarely or might be difficult to convey in their entirety on site. The aim was to supplement traditional semi-skilled on-the-job training with a more systematic form of vocational training which would take account of new technological requirements. The training building site was financed by company contributions to the Association. The creation of the training building site meant that "for the first time there was a third training site in the building industry (enterprises and vocational training schools being the other two) that was extra-plant, but not organised like a school" (Streeck, 1983, p. 24).

The concept of training building sites gained importance in the 1930s because the building industry grew from 1933, largely through military construction (barracks, airports, the Siegfried line, bunkers, etc.) and military industrial construction (the Hermann-Göring factories, the Volkswagen factory, the city of Wolfsburg, etc.) This building boom which was partly due to the governing National Socialists' war preparation, also brought new forms of vocational training in its wake (with the aim of training the "soldiers of work"). The training building site was also used to this end. The introduction of mandatory attendance at a vocational training school coincided with this period. This law still exists today. Up until that time, attendance in a vocational training school had been optional (Stratmann and Pätzold, 1984). Between 1936 and 1939, a network of training building sites (some of them residential) was created to increase the number of trainees and to improve the quality of initial vocational training. Operating costs were met by taxes imposed in 1937 and amounted to 0.01 per cent of the total wages and salaries paid by the building trade (Reuss, 1966).

Following the downfall of the National Socialist regime, mandatory membership and mandatory financing were dropped. The training building sites were continued after 1945, although their numbers were greatly reduced. They were taken over by the regional associations of the building industry at *Land* level and funded by contributions from the associations and by course fees. However, the extra-plant training part was small: Apprentices spent about four to six weeks a year on a training building site that was increasingly used for the further training of employees. When the building associations decided to extend the extra-plant segments of initial vocational training in the late 1960s, they were able to use the existing training building sites as a basis (Streeck, 1983).

The development of a funding formula for extra-plant training centres, the central result of changes in vocational training in the early 1970s, was facilitated by the existence of the so-called "building industry social funds". These social funds (holiday pay, supplementary benefits, compensation pay) are at the heart of a building sector social policy that is funded jointly by the union and the employers' associations (as laid down in 1961 by a collective agreement: 20 per cent of total gross wages) and supported by the State. The importance of the building industry social funds for the establishment of extra-plant training centres lies in the fact that they represent a tried and tested model of co-operation between trade unions and employers' organisations; the governing bodies of the social funds have equal representation, with unions occupying half of the seats and the two employers' organisations the other half.

The model of a comprehensive building occupations school in Bremen played an important role in the search for solutions to the problem of extra-plant training in the late 1960s. This constituted an attempt to bring this type of training under the responsibility of the state. The trade unions indicated to employers that they were willing to implement this concept, if necessary, under the supervision of the social partners in the collective agreement. Thus, the preconditions for reforming the building occupations were essentially met.

Procedure, course and outcome of the reform of the building occupations

The initiators of stage-based training: the partners of collective agreement

The main impetus and drafts for the reform of vocational training came from three sources. These were the two employers' associations in the building industry at federal level, the National Association of the German Building Trade (*Zentralverband des Deutschen Baugewerbes*, ZDB) and the Main Association of Building Industry and Civil Engineering (*Hauptverband der Deutschen Bauindustrie*, HDB) and the Industry-wide Union of the Rock, Stone and Related Mineral Products Industry (*Industriegewerkschaft Bau-Steine-Erden*, IG BSE). Both of the employers' associations were involved in negotiations for the collective agreement with the IG BSE. The existence of two employers' associations in the building industry is partly due to differing problems and interests in the enterprises, but also partly a result of historical developments.

The ZDB represents a total of 43 000 companies, approximately 74 per cent of all craft trade enterprises in the building trade. The HDB represents about 17 000 companies. The assumption that this industrial association only represents large businesses is, how-

ever, false. The size of a business, especially in the building industry, is not a sufficient criterion for differentiating between craft trade and industry. It would be more accurate to say that "the ZDB and HDB divide the building trade between them in the way that 'building' is separated from 'civil engineering' in England" (Streeck, 1983, p. 19).

The structural differences in the way the two employers' associations organise their activities were also reflected in the different degree of their involvement in vocational training. Although the building industry employed about 33 per cent of all those working in the building trade in 1970, it only trained about 13 per cent of the total number of apprentices (see Figure 4 in the Annex). The building craft trades sector, however, which employed 67 per cent of workers in the building trade, trained approximately 87 per cent of apprentices.

The different involvement of the two employers' organisations in initial vocational training is explained by several factors. First, it reflects the great interest that small craft trade enterprises generally take in well-qualified skilled workers. In contrast, the building industry has a much higher percentage of semi-skilled workers and only took an active interest in formal training much later. For a long time it relied partly on giving its employees superficial training, and partly on the craft trades, from which it obtained large numbers of skilled workers.

In the early 1970s, the building trade associations began discussions on reform in three key areas: stage-based training, extra-plant training and the financing of contributions. For three reasons, negotiation took place in a relatively short period of two years:

a) both the craft trades and the building industry were threatened by a dramatic reduction in the number of trainees;
b) the trade union, as the organisation representing the most important occupational groups in the building industry, was able to conciliate between the different interests in the entire sector during the negotiations;
c) the principle of consensus imposed on the social partners by the Federal Ministry of Economics, obliged them to reach an agreement on new regulations for training.

Agreement with the public authorities: the Federal Ministry of Economics, the Federal Ministry of Education and Science and the regional Ministries of Education and Cultural Affairs

The union and the employers' associations in the building trade started working together on a draft regulation in 1969; they completed their work in early 1972. The original draft submitted to the Federal Ministry of Economics proposed a drastic reduction in the length of training from 36 to 21 months. The reduced time was to be compensated by "a more systematic methodological and didactic approach" and "tighter organisation" of training (Bauindustriebrief, 1975, p. 15).

It was proposed that those occupations included in stage-based training should have a common core of basic training lasting seven months (Phase I) which could only be completed in a vocational training school and extra-plant training centres. In the following seven months (Phase II), trainees were to specialise in one of the three main areas of

construction: structural engineering, civil engineering or finishing. This was the second of three phases. Following nine weeks of extra-plant training, the trainee passed an examination to qualify as a skilled structural or civil engineering worker or a skilled finishing worker (Stage I). It was intended that the trainee then move on to Stage II for the next seven months, four weeks of which would be spent in extra-plant training. This segment was to be completed by skilled worker examinations in one of the 14 specialised occupations in the fields of structural or civil engineering or finishing.

By the beginning of 1972 the building associations had progressed sufficiently in the reform of vocational training that they could present an approved draft regulation to the Federal Ministry of Economics. Since the Ministry and other federal authorities had been kept informed and had been consulted throughout the negotiations, they had no objections to the draft proposal.

However, the Education and Cultural Affairs Ministries of the *Länder*, the authorities responsible for vocational schools within the dual system of vocational training, had not been informed of the negotiations and they objected to the proposal for stage-based training shortly after it was submitted. The Standing Conference of the Ministers of Education and Cultural Affairs also raised objections. The *Land* Education and Cultural Affairs Ministers objected to two points in particular: Firstly, the shortened duration of vocational training did not tally with the curricula timetable and school holidays of the vocational training schools. Furthermore, the proposal clashed with plans by some of the *Länder* to make the first year of vocational training a year of basic vocational training conducted in a school, a year which would count towards the training programme. To prevent a delay in ministerial ratification – and therefore a delay in implementing the new vocational training regulations – the building trade associations modified their proposal to take into account the objections of the *Land* Education and Cultural Affairs Ministers:

a) The length of vocational training originally proposed was extended first to 33 and then in 1984 to 36 months, which extended each of the three stages – basic training, specialisation and special skills training – by a year. This brought the proposal into line with the planning requirements of the vocational training school system.

b) The practical extra-plant vocational training element was shortened in the first year of training in favour of learning at a school.

This modification enabled the *Länder* to recognise the first year of stage-based training as a co-operative pre-vocational training year because the amount of time spent on each element was comparable to that of the wholly school-based pre-vocational training year planned in some of the *Länder*. This was one of the most important conditions for making the two forms of pre-vocational training officially equivalent in stage-based vocational training.

One of the objectives of the associations involved in drafting the reforms was to avoid letting vocational training slip further into a school or state system. The decision by three *Länder* (Bavaria, Lower Saxony and parts of Baden-Württemberg) in the first half of the 1970s to introduce a wholly school-based pre-vocational training year therefore led to a conflict within and between the associations. Much to the surprise of the leaders of

the employers' associations – and in contradiction to their policy – the branches of the building trade associations in these three *Länder* opted for a full-time school-based pre-vocational training year.

The main reason why these regional branches broke away from the strong front presented by the national associations of the building trade was the high cost of extra-plant vocational training centres which would have had to be built from scratch in contrast to the densely populated centres. Having the first year of vocational training take place in schools allowed building firms to shift the investment costs to the State, while also avoiding the remuneration of trainees' in the first training year as these costs are borne by the employment agencies in the case of a wholly school-based pre-vocational training year.

These strategic positions on the part of the employers did not, however, call into question the common aim of all the building trade associations to influence the curriculum of the school-based pre-vocational training year. It was necessary to achieve equivalency between the first year of the dual system and the entirely school-based pre-vocational training year. Following a difficult struggle with the education authorities of the three *Länder*, the associations were able to convince them to renounce extending the pre-vocational year to woodworking trades and to incorporate elements of building technology training into the co-operative pre-vocational training year. Incorporating these training elements ensured that the co-operative pre-vocational training year and wholly school-based pre-vocational training year were equivalent not only in length but also in contents and that they could both be counted towards stage-based vocational training.

Features of stage-based vocational training

The summary that follows is based on the last amendment (17 December 1985) of the regulation on vocational training in the building industry of 8 May 1974 and on the regulation of the core curricula for vocational training in the building sector for vocational schools, adopted 2 October 1985.

Stage-based vocational training in the building trade offers 17 options of specialisation within the fields of structural engineering, civil engineering and finishing (see Figure 5 in the Annex). The two regulations cited above define their contents and organisation. Stage-based vocational training consists of two stages and lasts a total of three years.

The first vocational training year – which is taught according to a common curriculum – aims to convey cross-sectional sector-specific skills. That is, it should give trainees basic vocational qualifications which will enable them to co-operate more effectively with workers in other occupations on a professional and social level in their future working life. This largely takes place in extra-plant training centres and vocational training schools, with trainees spending twenty weeks in each. Taking holidays into account, this only leaves 12 weeks for practical training in an enterprise. The classes at the vocational training school are continuous.

In the second year, trainees specialise in one of the following occupations:

- skilled structural engineering worker specialising in bricklaying, steel and reinforced concrete work or heating and chimney-building work;

- skilled finishing worker specialising in cabinet-making/joinery, stucco-work, tiling, slab-work, mosaic-work, composite flooring, insulating or dry stone walling;
- skilled civil engineering worker specialising in road building, pipelaying, sewer building, well digging or tracklaying.

In this and the following year, practical vocational training (39 weeks minus holidays and the time spent at a vocational training school) is carried out in an enterprise. The extra-plant training segment is restricted to 13 weeks. Stage I can be completed following the second vocational training year when trainees have become skilled structural or civil engineering workers or finishing workers. Less than 3 per cent of trainees take advantage of this opportunity, however. As a rule, they choose to carry on with training in one of 14 advanced training occupations.

In the third vocational training year (Stage II), trainees specialise in one of the 14 advanced training occupations in the fields of structural engineering (bricklayer, reinforced concrete worker or heating and chimney-building worker), finishing (cabinet-maker/joiner, stucco layer, floor tiler, slab-, mosaic-, or composite floor layer, thermal- or noise-insulator or dry stone waller) and civil engineering (road builder, pipelayer, sewer worker, well digger or tracklayer). Vocational training programmes for those wishing to become a dry stone waller, pipelayer, sewer worker or tracklayer are usually offered by the building industry.

The training centres taking part in stage-based vocational training each have a specific didactic orientation. The learning of specialised skills which takes place in an enterprise, at least in the craft trades, largely takes place through demonstration and practice led by both master craftsmen and skilled workers. The didactic methods of vocational training are taught at universities as part of post-graduate studies. Similarly, theoretical classes are taught by teachers who have university qualifications.

At present there are 165 extra-plant training centres with more than 10 000 students on vocational training courses (Schubert, 1989). The extra-plant training centres are oriented less towards school teaching methods and more towards the principles of work pedagogy practised in the company (REFA, 1989, 1990). More and more, alternatives to trainer- and training course forms of initial and continuing vocational training are also being developed in the building industry. The trainers in extra-plant training centres are skilled workers, master craftsmen and sometimes also technicians and engineers who generally, though not always, have additional teaching qualifications.

Implementing and updating stage-based training: resistance and success

Scope and limitations of stage-based training

During the implementation of stage-based vocational training, both the funding through taxes and the extension of the extra-plant training centres caused irritation and resistance. In the context of such hostility, the scope of stage-based training and the capacity of integration had to be defined.

The initial resistance of the education and cultural affairs ministries does not alone explain why the reform proposal, the essential features of which were adopted in 1972, only took effect nationally in 1982, ten years later. This was brought to light after the social partners in the building trade signed a "Collective Agreement on Vocational Training" on 19 September 1975. This collective agreement regulates the contributions to be paid towards the costs of stage-based training. The agreement stipulated that every company in the sector was to pay 0.5 per cent of its total gross wages to a central fund from which companies providing vocational training would have some of their costs refunded. Contributions were to be collected through the complementary benefits agency.

Following ratification by the social partners, the collective agreement was universally binding and it came into force on 1 May 1976. It was strongly criticised by the other employers' associations: "The collective agreement governing contributions produced a far greater division among the building trade associations and the chambers and trade associations of the other sectors than had the introduction of stage-based training with an obligatory 'third training centre'. The latter saw the collective agreement as being a precedent (...) that weakened the position of all employers" (Streeck, 1983, p. 50). Employers saw themselves threatened by public policy directions on vocational training in the early 1970s: the "Edding Commission", brought in by the federal government in 1974 to look at "the costs and financing of non-school-based vocational training", had suggested financing training enterprises through contributions from all companies. However, those representing the building trade stood firm against the attacks of the leading employers' associations pointing to the structural peculiarities of their sector. In particular, they emphasized the non-public and sector-specific nature of the planned fund and argued that, in contrast to other existing social funds, it would not lead to greater bureaucracy.

Whereas the funding of costs caused conflict between the building trade associations and the other trade associations, the development of extra-plant training centres caused conflict among the building trade associations themselves. Because of the high cost of investing in extra-plant vocational training places – estimated by the ZDB (National Association of the German Building Trade) to be DM 50 000 (US$ 19 860) per training place and even higher by other calculations – the regional craft trade associations in particular saw themselves faced with insurmountable financial problems. The federal government had created a programme of incentives aimed at encouraging extra-plant vocational training centres and announced its intention to bear up to 80 per cent of the investment costs if the agencies responsible for the extra-plant training centres contributed at least 10 per cent. The remaining costs were to be borne by the respective *Länder*.

Despite the prospect of state financial support, the project had a difficult start. Due to stalling by the regional and local craft trade associations (especially by the guilds), the development of the training centres lagged far behind expectations. By the end of 1977, 6 months before the end of the transitional period, the ZDB asked the Federal Ministry of Economics to extend the transitional period by four years on the grounds of insufficient capacity to carry out extra-plant training in its branch. This caused the first open conflict between the associations of the building trade. The resistance of the traditional "mono-occupations" – such as the guilds of roofers and paving and terrazzo makers – also contributed to the tensions. They resolutely and successfully opposed the idea of intro-

ducing stage-based training into their occupations. Consequently, an attempt was made at this time to set the boundaries between the structural and civil engineering occupations taught by stage-based training, and those of finishing. Furthermore, painters, varnishers and roofers – whose members make up the largest numbers in the finishing trade – are not part of the ZDB and were not prepared to join it as a precondition for involvement in stage-based training. Instead they looked for their own ways of reforming vocational training, turning to independent organisations and social funds. In contrast to the regulation of 1974 on stage-based training, a new regulation concerning "mono-occupations" stressed that it was not necessary to include extra-plant vocational training segments. It would be left to the training committees of the concerned chambers to conclude accords on this issue.

Even in the finishing trades which had integrated stage-based vocational training, there were doubts. The cabinet-makers/joiners and floor tilers, for example, protested that pre-vocational training was too broad. They were concerned that young skilled workers would have less "occupational maturity" if specialisation was introduced too late. To illustrate these concerns, it is hard to explain to an experienced skilled floor tiler why, in 20 weeks of extra-plant vocational training, only one week is set aside to learn and practice how to lay floor tiles (Schubert, 1989). On account of these and similar objections, extra-plant training centres now tend to introduce specialisation earlier, indeed sometimes during the pre-vocational training year. Adjustments in the contents of stage-based training are constantly being renegotiated. In this manner, the social partners decided to limit specialised training in the first year to a period ranging between four and eight weeks (IG BSE, 1989).

The achievements of the introduction of stage-based vocational training can be summarised as follows:

- According to the employers' associations, the quality of vocational training has significantly increased.
- This increase was achieved in a sector in which systematic vocational training was hindered by production methods (*e.g.* changing production sites, constant pressure of deadlines and the rising incidence of piecework wages).
- Stage-based training with its elements of basic training and specialisation, facilitates the co-ordination of specialists both usual and essential on building sites.
- Extra-plant funding counteracts the reluctance of small businesses, relatively numerous in this sector, to undertake vocational training on account of the traditionally high turnover of skilled workers in the building trade.
- Because of the quality of vocational training received and the polyvalence of workers thus formed, the risk of unemployment fell and their earnings potential rose (Hilbert *et al.*, 1990, p. 60).

Current problems of training and learning organisation

The following section will focus on those aspects of vocational training schools and extra-plant training centres which negatively influence the adaptability and performance of stage-based training.

- With a teacher-student ratio of 1:51, the case in the vocational training centres of North Rhine-Westphalia, at best only 75 per cent of the prescribed training programme can be completed. Under these conditions it is not possible to carry out special education as envisioned by the educational regulations of the vocational training schools. General subjects such as German, politics and physical education, which should make up 30-40 per cent of the curriculum, are most seriously affected by cuts.
- Teaching classes of building workers is particularly exhausting because most of the students only have a lower secondary school leaving certificate and despise school. It is no longer possible to meet such a challenge when teachers face classes of up to 30 students. In light of this, vocational school teachers consider it particularly unfortunate that the school-based and extra-plant elements of stage-based vocational training are not spread evenly over the three training years, but rather are concentrated in the first year of vocational training, directly following completion of the ill-tolerated secondary school.
- There will be a further reduction in teaching personnel due to the general shortage of skilled workers in extra-plant vocational training centres. A survey on the working situation of 120 trainers in extra-plant vocational training centres revealed that (IG BSE, 1990): Seventy-five percent of them were master craftsmen with an additional teaching qualification and 12 per cent were qualified as engineers or technicians or had a diploma in business management. They had few opportunities to engage in continuing training. Slightly more than half said that they were responsible for groups of up to 40 trainees. Disadvantaged learners suffer because, as in vocational training schools, it is difficult to give individual attention when teaching large groups. The large number of students with special needs makes it necessary to provide teachers with continuing training in special education. A majority of vocational trainers claim that their work leaves them no time to prepare the lessons. If one compares vocational training schools and extra-plant training centres, a common problem appears: the shortage of personnel. In both cases, this severely restricts the accomplishment of teaching aims.

3. Assessment of vocational training in the building occupations and future challenges

In presenting and analysing the reform of vocational training in the building trade it was first recognised that, in a sector based principally on craft trades and to a lesser extent on large-scale industry, the personnel management situation was doubly burdened. The associations representing the building trades assume that the demand for new skilled workers during the 1990s can only partly be met by the external labour market. It is also expected that, as in the past, a high proportion of skilled workers will take advantage of opportunities to move into sectors with more stable and ergonomic working conditions.

It was in response to a similar situation that stage-based training was introduced in the building trade in 1974. Its principal aim was to considerably improve the quality of vocational training while increasing its attractiveness and thus, the market efficiency of

the building trade through measures focusing on business management and supply orientation. This optimisation has been a success in vocational training. Nevertheless, one point of contention has remained since 1974 in the building trade: Now, as in the past, trainees in the building trade receive far more pay than their peers in other sectors. For example, a trainee bricklayer receives DM 877 (US$ 466), DM 1 365 (US$ 726), and DM 1 723 (US$ 916) in his first, second and third year of training respectively. However, now as in 1974, the wages of building workers are not guaranteed but depend on the weather. Although the Labour Office pays a "bad weather bonus" in winter, working hours lost due to inclement weather in summer are not compensated. The bad weather bonus paid in winter does not imply continuation of pay; it is compensation for technical unemployment. Compensation payment from the social funds has only been on the agenda of the collective negotiations since the last pay round. Unstable annual income, a major factor in workers emigrating from the building trade, will continue until a satisfactory regulatory solution is found. This drawback, along with the highly strenuous physical work involved in building, will continue to have a negative effect on the recruitment of trainees. Since the natural conditions of building work cannot be altered, one might ask whether the recruitment threshold of trainees might be decreased if this situation were improved, now that the issue of high-quality vocational training opportunities in the building trade, offering future prospects, has been dealt with so positively.

Trainees in the building trade have generally completed their lower secondary schooling and unlike most of their peers in their respective school-year, they have not managed the transition into higher secondary schools. Trainees with an intermediate or upper secondary school-leaving certificate are, therefore, the exception, and such trainees generally see their vocational training simply as a stepping-stone to other higher forms of training. If one were to summarise the problem of vocational training as a transitional form of schooling, one could see that the same pattern has continued since 1974.

Since the introduction of stage-based training for all occupations in structural and civil engineering work and in numerous finishing occupations, a number of new regulations have been adopted and occasionally new occupations have been introduced, such as that of scaffolder and construction machinery operator (1991). Even though stage-based training has concerned only 53 per cent of trainees, it has nevertheless stimulated other reforms. Due to the general increase in extra-plant training segments, stage-based training may well be seen retrospectively as a trend-setter. Even small- and medium-sized enterprises in other sectors implement an integrated system of continuing vocational training, thus benefiting from the synergic effects interlinking the pedagogic competence of extra-plant training and continuing training facilities with on-the-job learning in an enterprise (Paulsen, 1990).

Stage-based training has undergone two adaptations in the course of its ten-year introduction:

- The concrete components and terrazzo maker was formally withdrawn from stage-based training in 1985. It is a professional category closer to that of an industry-oriented building materials producer. Its occupational profile (non-seasonal and stationary work) differed from the other main occupations in stage-based training, i.e. the occupations of structural and civil engineering workers. Common training was, therefore, rather senseless.

- Contrary to original plans, in a joint recommendation of the partners to the collective agreement, it was decided that in-depth specialised training should not exceed four to eight weeks in the first year of training. Finishing occupations in the stage-based training system and in particular the tiler and the joiner/cabinet maker have brought some of the specialised training for the occupation forward into the pre-vocational training year (Adams, 1992).

In addition to the 17 occupations covered by stage-based training, there are a further 16 mono-occupations in the areas of civil engineering, finishing and in stone processing, building materials production and building materials inspection. Bricklayer and structural engineering trainees outnumber all other building occupation trainees in stage-based training. The percentage of skilled workers is highest in the structural engineering and finishing occupations while the percentage of semi-skilled workers is small. The situation is different in civil engineering and the building materials industry, where the percentage of semi-skilled workers far exceeds that of skilled workers.

The building trade has proven its capacity to react appropriately to new challenges through its training regulations. In the process it has also been able to do justice to the demands of craft trade and industrial occupations in the stage-based training system through a differentiated development of training regulations. The high level of co-operation not only in the restructuring of the occupations but also in implementing this reform, for example, in the occupational committees of the chambers, conferences of the vocational schools and in the choice of trainers and courses, undoubtedly played a major role in achieving these positive results. Nonetheless, a number of problems remain: notably there has been failure to update the specialised elements of the occupational profiles and the core curricula for the occupations grouped together in stage-based training. Finally, the insufficient personnel in vocational schools and extra-plant training centres constantly compromises attainment of training goals.

In the field of continuing training, the following developments and needs are emerging: since only a limited number of young skilled workers (and in the future even fewer) can be recruited from the external labour market, continuing training and the retraining of existing staff, especially semi-skilled workers, becomes a matter of great urgency. It is as important for the building trade as the success of initial training.

It has been shown that both skilled workers and semi-skilled workers in the building trade have longer-than-average work and professional experience. This represents a training potential well worth exploiting. In this respect too, the building trade can look back on previous history to update continuing training concepts. There is probably sufficient space for such continuing training initiatives in the existing extra-plant training centres since these were constructed in the 1980s during the trainee boom. The concept of stage-based training also offers enough "training components" to permit the development of a range of targeted, flexible training initiatives.

Stage-based training, introduced in 1974, was a response to the crisis of the 1960s. Today, it is necessary to supplement this historical reform project with a reform of continuing training that is equal in quality to its predecessor in terms of work pedagogy and collaboration between the social partners.

Part III

THE RESPONSIVENESS AND REGULATION OF TRAINING CAPACITY AND QUALITY

by

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This part is concerned with the ability of the dual system to adapt appropriately to changes in the skills required by the economy and the related changes in the training needs of future employees. The vocational training system can only respond to structural change in an economically and socially adequate manner if it is in a position – by way of its high adaptability – to deal with new obligations and requirements, many of which are of limited predictability.

An important prerequisite for this is sufficient autonomy at the level of the training enterprises and part-time vocational schools. The possibilities they have of acting independently to adapt their training offers to altered circumstances is influenced by the range and form of public regulations (*e.g.* training regulations, regulations pertaining to the suitability of enterprises to conduct training or on the training of trainers in enterprises and the training of teachers). While public regulations curb the autonomy of the individual training enterprises and vocational schools, they nevertheless provide a reliable framework for training providers in general. Public authorities (federal, *Länder*, and local government level) have a wide spectrum of instruments available to them, in addition to legal regulations, to influence – in an appropriate manner and against the background of changing framework conditions – the behaviour of training providers and those seeking vocational training. The tools at their disposal range from information and counselling services to financial incentives.

In the following section, the question of the dual system's ability to adapt and the way it is regulated will be examined separately for the organisation of training capacity and the moulding of training quality. First, the main challenges the dual system faced in the 1970s and 1980s will be described with regard to the quality and quantity of training. This will be followed by an outline of the main points of public policy on vocational training in relation to the above-mentioned challenges of these two decades. The conclud-

ing section will examine and summarise the most important paradigms for controlling training capacity and quality.

The restructuring and modernisation of regulations and other instruments of public intervention in the vocational training system are matters for the different decision makers responsible for education policy. Flexible and effective co-operation on education policy is vital to the innovative capacity of the vocational training system as a whole. From this perspective, a separate section will recall the most important institutions and the principles of co-operation and harmonization among those involved in developing education policy. The final section looks at future challenges the dual system will have to face as well as prospects for reform.

1. Regulating training capacity

Main challenges

The main challenges for the 1970s and 1980s with regard to regulating the capacity of the German vocational training system resulted from demographic developments in the number of school leavers. While in 1970 only 716 000 young people left school, the number of school leavers soared to 1.018 million in 1983, then dropped back to 672 000 in 1990. In addition, the behaviour of young people regarding training changed. A marked trend until the mid-1980s was the ever-increasing percentage of young people in an age group who opted to continue their education in the dual system and their increasingly higher level of schooling prior to starting training. Thus for instance, the percentage of young people with university entrance qualifications jumped from 9.3 per cent in 1983 to 16.2 per cent in 1990. At the same time, there was a decline in the number of young people looking for a job without vocational qualifications.

As a result, there was a significant increase, within a few years, in the demand for training places. This trend reached its peak in 1984 (523 000 in 1976; 764 000 in 1984) then continued to decline at a steady pace (559 000 in 1990). Surprisingly enough, the number of training places enterprises made available virtually kept pace with the demand for them up until the peak in 1984, despite the occasionally difficult economic situation (514 000 in 1976; 727 000 in 1984). Likewise, there was a drop in the number of available training places as demand for them declined (659 000 in 1990).

Nevertheless, between the mid-1970s and the mid-1980s the overall demand for training places was generally higher than the supply although there were minor differences depending on the region and training occupation. The number of applicants who could not be placed by 30 September, the deadline each year, far exceeded the number of vacant training places, especially between 1982 and 1986. In 1986, 59 000 young people were still looking for a traineeship on this date. After the mid-1980s, when the decline in demand set in, more and more trainee positions remained unfilled (114 000 in 1990).

The groups most affected by the shortage of training places up until the mid-1980s were young people who had not acquired a lower school-leaving certificate, handicapped young people and young foreigners. Within these groups girls, were at an even greater

disadvantage. In order to obtain a training place at all, many young people had to make concessions in their choice of training occupation and training enterprise[1]. In many instances trainees had to wait quite a long time before finding a training position. Most of them attended some sort of school-based training programme in the meantime (basic vocational training year, specialised vocational school, preparatory vocational training courses run by the Labour Office or a preparatory vocational year). Some young people did not even try to obtain a training place in view of the shortage (Kloas and Sacks, 1991, p. 26 ff).

The crisis on the training place market accentuated the traditional discrepancy between the sectoral structure of the training places on offer and the sectoral structure of jobs.[2] These discrepancies still exist, although to a lesser extent, when there is an oversupply of training places. Now as in the past, the dual system has above-average numbers of trainees in the craft trades and production sector while, when it comes to employment, the trend is towards occupations in the service sector. The relaxation recorded on the training place market since the mid-1980s has clearly improved the ratio between the supply and demand of training places even in economically underdeveloped and crisis-ridden regions and for the groups who have been at a disadvantage in the past. This does not mean that transition problems from training to employment have disappeared altogether, however.

After more than ten years of severe shortage in the number of training places, from the late 1980s training positions were remaining vacant in many fields because of the steep drop in the number of school leavers. The food industry was particularly affected, as were building occupations and the metalworking industry. On the other hand, the deterioration in the economic situation since the early 1990s has led many companies to curtail their offers of training.

In the context of a tense labour market situation, severe problems arose, especially from 1980 to 1985, in the transition from training to employment. Germany had an unusually high rate of youth unemployment (in 1986 the unemployment rate for under-25-year-olds was 8.1 per cent) (Eurostat, 1989). The percentage of young skilled workers who were unemployed six months after finishing their vocational training likewise rose – from 3 per cent in 1979 to 9 per cent in 1984 (Hofbauer and Nagel, 1987, p. 47). The risk of unemployment was especially high for those who had undergone training in a small enterprise, especially in a craft trade, and for those seeking employment in typically female occupations (Stegmann, 1991, p. 93 ff). Since the mid-1980s youth unemployment has dropped, in parallel with the decline in the number of young people looking for a job.

In the first half of the 1980s especially, young skilled workers who had completed their training often had to lower their expectations with regard to occupational status, job security and location of employment in order to find or keep a job. It was rare that the problems newly qualified skilled workers encountered in finding a job could be attributed to a lack of qualifications (Bolder *et al.*, 1991, p. 33). According to a survey by the Federal Institute for Vocational Training (BIBB) conducted among young people who completed their training in 1984, after three years about 50 per cent had a permanent work contract in the occupation they had trained for and 15 per cent were working on

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such a contract in a job which did not correspond to their training. In the latter case, they were doing unskilled work or were employed as skilled workers in a different occupation (Schöngen and Westhoff, 1992, p. 97). Despite the troubled economic times, the majority of trainees were offered employment by the enterprises that trained them. Often companies initially took them on as semi-skilled workers, and offered them employment in keeping with their training at a later date once they had proved themselves and as vacancies emerged (Winkel, 1990, p. 35, 38).

The decision to work in an unskilled or semi-skilled job was sometimes a voluntary one and was usually accompanied by a change to another branch of the economy. The young workers considered they would have better working conditions and/or earn higher wages than in the occupation they had trained for (the most common example would be switching from a craft trade to industrial manufacturing). Employers value the specialised qualifications, social competences and work morale (*e.g.* discipline, accuracy) these workers have acquired in the course of their training. If, however, young people do not succeed in finding employment in keeping with their training within a foreseeable period after their training, their status as skilled workers may be jeopardised on the labour market. They will no longer be able to reactivate enough of the knowledge and skills they acquired during their training. In addition, the professional experience and work routine a prospective employer expects from a skilled worker can only be gained by pursuing the occupation.

The crisis on the labour market tended to increase the traditionally high rate of mobility of young skilled workers. Six out of ten of those interviewed by the BIBB took the initiative to reorient themselves, or were obliged to reorient themselves, at least once in the first three years of employment. And every second interviewee had changed enterprises in this time. Generally, the job in the new company was in keeping with the occupation the skilled worker had learned (Schöngen and Westhoff, 1992, p. 98).

Main aspects of public policy in the field of vocational training

The range of instruments available to regulate the capacity of the vocational training system was poorly developed until the mid-1970s. Confronted with the growing shortage of training places for young people leaving general education schools, followed by a shortage of jobs, the federal government, Federal Labour Office, *Länder* and local governments felt they had no other choice but to intervene in these transition processes that had traditionally been governed more or less by the market. Each reacted to the lack of training places with different types of measures, according to their legislative competence. The central objective was to create enough training opportunities, notably for young people who were disadvantaged on the market.

Programmes to promote the transition from school to vocational training

- *Increasing school-based opportunities to prepare young people for vocational training and creating basic vocational training*

In the mid-1970s the *Länder* stepped up their campaign to develop full-time school-based vocational training programmes. These had been introduced in the early 1970s, initially with the simple intention of upgrading the quality of preparation for vocational training and basic vocational training.

The vocational training preparation year (*Berufsvorbereitungsjahr*, BVJ) was originally to be a preliminary introduction to training for young people with gaps in their school education and/or specific learning problems. With the increased demand for training places becoming a more acute problem, the vocational training preparation year assumed the additional function of a station to collect young people who did not necessarily have learning problems but did have market disadvantages (Glaser and Lemke, 1986). It also took on the function, de facto in some *Länder* and even officially in others, of providing basic vocational training to ease the transition from school into working life for those young people who were either not at all interested in receiving vocational training or were unable to find a position as a trainee (Glaser and Lemke, 1986; Braun, 1988, p. 402). The vocational training preparation year likewise tackled the problem of compulsory vocational schooling for young workers since they could meet mandatory schooling requirements by attending such a programme. The number of young people doing this preparatory year varied according to the situation on the training place market increasing from 25 000 in 1976 to 46 000 in 1982 and dropping back down to 24 000 in 1989.

The basic vocational training year was introduced in 1971/1972 with the aim of de-specialising the first stage of training, making it more systematic from a pedagogical point of view and deferring the final decision on the choice of occupation to a later date. When the shortage of training places became more serious, the basic vocational training year also took some of the strain off the training place market. Young people who had not been able to find a training place often enrolled in this type of school programme. The role it played in this respect is reflected in the figures: the number of students taking the basic vocational training year rose from 23 000 in 1976 to 85 000 in 1984, and as the situation on the training place market relaxed, the numbers enrolled in these programmes steadily declined (52 000 in 1989).

The specialised vocational schools, whose full-time programmes generally last two years full-time, also helped, especially through its first-year classes, to bridge the gap for young people who had trouble finding a training position. Almost 50 per cent of the students enrolled in specialised full-time vocational schools in 1982 left them, generally to take up training under the dual system (Alex, 1985, p. 188). Despite the considerable investments made in these schools (*e.g.* for training workshops), the only fully qualifying training programmes for which there is much demand are those that have no equivalent in the dual system (*e.g.* foreign language secretary, data processing assistant).

- *Programmes of the Federal Labour Office to prepare young people for vocational training*

The Federal Labour Office has implemented non-school programmes similar to those offered in the schools to prepare young people for vocational training or a job. These programmes absorbed a significant number of the young people unable to find a training position (Schober, 1986; BMBW, Annual, 1989, p. 114 ff.). When the number of training applicants was on the increase, the Federal Labour Office temporarily extended its main target groups beyond the categories of the socially and/or educationally disadvantaged (Strikker, 1989 p. 32). About half of the 30 000 participants in such programmes in 1986/1987 started training within the dual system, while about 10 per cent found a job (*Ibid.*, p. 34).

- *Programmes to promote vocational training outside enterprise-based training*

The promotion of training for disadvantaged young people represented a new form of public intervention in vocational training. These programmes were run from 1980 onwards as part of a special programme of the Federal Ministry of Education and Science aimed at overcoming the shortage of training places. The programme was to give vocational training in a recognised training occupation to "young foreigners, young people with learning problems and socially disadvantaged young people who could not be placed in a training position immediately after they had completed a programme to prepare them for training but who would be able to attain qualifications in a recognised training occupation provided they received intensive support" (BMBW, Annual, 1981, p. 71).

The programme for disadvantaged young people provided for two types of measures:

- A complete training programme in external training centres mainly run by non-governmental bodies in conjunction with on-the-job training. The programme's aim of continuing training from the second year onwards in an enterprise proved unfeasible for all but a small percentage of the trainees as a result of the tense situation in the training place market. Of those who started their programme in the 1982-1983 school year, 16 per cent switched to a training enterprise, 48 per cent successfully completed their training in an external training centre and 36 per cent dropped out of the programme altogether (BMBW, Annual, 1989, p. 117). From the 1984/1985 school year onwards, the programme was extended to young people with school-leaving qualifications who were unable to find a training place since they lived in regions with a significant lack of training opportunities.
- To complement the complete training programmes in training centres outside enterprises, the government introduced an additional programme of training in 1982 to help promote disadvantaged young people who were doing their training in enterprises. This extra support and socio-pedagogical supervision were to enable young people with relatively mild handicaps to complete mainstream training under the dual system. The number of trainees who received support under this scheme rose from 2 000 in 1983/1984 to 37 000 in 1989.

Funds for programmes in favour of the disadvantaged have been increased continually: DM 29 million in 1981 (US$ 12.83 million), DM 256 million in 1984 (US$ 89.95 million), DM 458 million in 1989 (US$ 243.62 million), helping substantially to combat the shortage of training positions, especially for problem groups. Contrary to the original plan, the programme was continued even after the situation on the training place market had improved and became institutionalised under the Labour Promotion Law in 1988. However, few enterprises have taken advantage of government offers to provide financial assistance for training disadvantaged young people. (Zielke and Lemke, 1991, p. 94 ff.).

- *Measures to extend the supply of training places in enterprises*

– *Financial assistance for the creation of additional training places*
While the federal government subsidised training conducted in external (non-enterprise) training centres only, in the second half of the 1970s most of the *Länder* began to grant direct subsidies for in-company training places. These assistance measures were aimed primarily at certain problem groups and regions in difficulty (Berufsbildungsbericht, 1985, p. 106).
– *Promotion of external training centres*
The systematic development of external (non-enterprise) training centres also had the effect of increasing the number of in-company training places. In one particular scheme, the federal government and the *Länder* agreed in 1973 to subsidise the creation by the economy, of 77 000 training places in external training centres. This goal had virtually been achieved by the mid-1980s. While the main goal behind the creation of external training centres was to upgrade the quality of vocational training by systematically supplementing the training provision of small- and medium-sized enterprises, it also encouraged many other enterprises, which otherwise would not have had the means to provide comprehensive training (Beicht *et al.*, 1987, p. 21 ff).
– *Legislation on tax financing*
The financial regulations introduced in the Training Place Promotion Act of 1976, despite strong opposition from trade and industry, were never applied and the law was eventually rescinded by the Federal Constitutional Court. However, the potential threat embodied in this regulation may well have encouraged enterprises to increase the number of training places on offer. Businesses wanted to prove that they themselves were best placed to decide on the quantity and quality of training needed (Maier, 1986, p. 32). The tax financing, scheduled in this law in accordance with the wishes of the social-liberal federal government, was to help create the additional training places needed to absorb the young people born during the baby boom years.[4]
Following a complaint by the State of Bavaria, the Federal Constitutional Court in 1980 declared the law to be unconstitutional and, the federal government renounced attempts to include a global regulation on how businesses were to finance training when it redrafted the Vocational Training Promotion Act (Mückenberger, 1986, p. 36).

Vocational training schemes for unemployed young people

The many vocational training programmes run by the Federal Labour Office are targeted principally at unemployed youth aged 18 and over who have not completed any vocational training. The wide range of these training schemes allows assistance to be tailored to the needs of the target groups. They include job-creation measures to acquire occupational experience or an accompanying vocational qualification and also short and long programmes (up to one year) to acquire basic and additional qualifications (Schober 1986, p.14 ff). Unemployed youth who have worked for a specific period of time are also eligible for further training assistance (§41 of the Labour Promotion Act) and retraining (§47 of the Labour Promotion Act) schemes.

Most of the federal *Länder* increased the funds of the Federal Labour Office in the period under discussion here, through special programmes to combat the high rate of youth unemployment. Some *Länder* offered additional assistance within this framework for specialised theoretical and practical instruction as well as social and pedagogical supervision. They also provided subsidies to companies that gave young people a training contract in a recognised training occupation or a permanent work contract following the person's participation in such a scheme (Schober and Hochgürtel, 1980, p. 89 ff).

The increase in the number of participants in vocational training schemes for unemployed youth (including job-creation measures and further training and retraining schemes for unemployed young people under the age of 25) run by the Federal Labour Office illustrates that such programmes were used extensively to combat a deterioration in youth unemployment in the 1980s. The participation rate in such schemes soared from 29 000 in 1980/1981 to 101 000 in 1986/1987 (Strikker, 1989, p. 48).

While these measures certainly relieved the tense labour market situation, until the late 1980s they were not able to channel enough participants (especially problem groups with non-enterprise training) into jobs. This was due to the limited absorption capacity of the labour market. Thus, only slightly more than one-fifth of those who participated in programmes in 1984/85 managed to find a job. About one in every ten participants started vocational training and one in eight joined another work promotion scheme. More than 50 per cent remained jobless (Schober, 1986, p. 19 ff).

Patterns of regulation and the capacity of the vocational training system to adapt its supply of training places to demand

Adaptation of the training capacity of the dual system is largely left up to the self-regulatory mechanisms of the training place market. If the demand for training places is greater than the supply, school leavers are the main ones who have to compensate for the deficit by adjusting their choice of occupation and/or enterprise. When the opposite situation prevails, competition among training providers to recruit trainees and applicants' choice of enterprise and occupation decides which training positions are filled. Access to the training place market is not dependent on any specific school qualifications. And enterprises are free to decide whether or not they take on trainees at all. Furthermore, they are not obliged to offer their trainees employment at the end of their training.

The extent to which enterprises are able to recruit the number of trainees they might like with the educational background they might prefer, in other words, the extent to which the enterprises can be selective, depends on supply and demand. The criteria enterprises apply when selecting applicant trainees are not only very heterogeneous, they also prove to be relatively adaptable to changes in the demand for training places.

Many enterprises raised the standards they expected of their potential trainees quite substantially in the 1980s (to intermediate school-leaving certificate or university entrance qualifications) when there was no lack of applicants. Once the situation changed and applicants were scarcer, most of them lowered their standards again and they were more willing to offer training places to disadvantaged young people (*e.g.* young foreigners, slow learners). The heterogeneity and variability in the training requirements of the different enterprises makes it easy to co-ordinate the supply of training places with the different educational backgrounds of the young people seeking a training position.

When the demand for training is on the decline – as has been the case since the 1980s – the attractiveness of the training places on offer (especially the quality of training and the prospects of employment, earnings and career opportunities) has a stronger influence on whether the enterprises are able to find enough trainees. When the supply of training places exceeds demand, young people are more discerning in their choice of training enterprise, which is certainly desirable from a training policy viewpoint. Beyond the conditions laid down by government regulatory policy (*e.g.* training regulations) and/or regulations of the social partners (*e.g.* remuneration during training), it is up to the enterprises themselves to provide attractive working conditions and career opportunities, thus warding off the attempts of other businesses to lure away their workers.

Training in an enterprise must take place in accordance with the provisions of the Vocational Training Act. Thus, in accordance with § 22, the nature and equipment of the training premises must be suitable for initial training and the ratio between the number of trainees and the number of training vacancies or skilled staff (must be) appropriate. A training contract may only be concluded for training occupations recognised by the public authorities.

State regulation of minimum standards of training quality plays only a secondary role in controlling the supply of training places. The principal function of minimum standards is to guarantee that training quality is kept as uniform as possible (see Section 2 below). However, the existence of minimum standards can indirectly influence the supply of on-the-job training places through the suitability conditions they lay down for enterprises or through the repercussions of these norms on the cost-efficiency ratio.

When training places were extremely scarce, the federal government was very cautious about laying down new or higher standards, first looking to see if the existing requirements might be having a restrictive effect on enterprises' propensity to undertake training. For example, at the insistence of trade and industry, the government several times prolonged the transition period foreseen for implementation of the trainer suitability regulation. Adopted in 1972, this regulation required that trainers furnish evidence of their occupational and teaching competence.

On the other hand, education policy makers did not relax the minimum standards to try and alleviate the problem. The cost implications of minimum standards cannot be seen

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as a serious impediment to a market equilibrium. Although it is generally believed that most of the new training regulations enacted since the mid-1980s (*e.g.* in the industrial metal-working occupations) have raised quality standards and thus training costs, no direct, negative effects on the supply of training places have been discerned. Furthermore, enterprises still have a certain amount of manœuvre in allocating training costs, even when they keep to the official minimum standards (*e.g.* giving preference to less costly training occupations, rationalising the organisation of training).

The legal framework of the training place market allows enterprises significant opportunities to adapt their supply of training places quickly to the volume and structure of the expected demand for skilled staff. However, it should be noted that, regarding personnel planning, enterprises usually adopt a more short-term strategy.

In view of the immense increase in the demand for training positions until 1984, the supply of places reflected a high degree of elasticity in adapting to the situation even though it was not completely able to satisfy demand. The propensity of many firms to boost their supply of training positions far beyond economic, that is expected, needs is mainly due to the success of the chambers and employers' associations in mobilising their member companies (Hilbert *et al.*, 1990, p. 100 ff). Most of the instruments the State has to regulate the supply of training positions in enterprises would have been either impossible to use from a political viewpoint (*e.g.* tax financing) or they would have been too costly (*e.g.* extensive public subsidisation of on-the-job training places beyond the promotion of training places for problem groups).

It was small- and middle-sized enterprises,[4] and in particular craft trade enterprises, that increased their supply of training places over and above their direct demand for skilled workers. In these enterprises, training is widely integrated in the normal course of work. Since the trainees are employed productively, the ratio of training costs to benefits from training is generally more favourable than when large segments of training are separate from the work process, as is the case in large-scale enterprises. Furthermore, large enterprises' training capacity based on a specific training infrastructure (full-time trainers, trainee workshops, etc.) cannot be increased and decreased as flexibly as the training capacity of smaller enterprises.

Adapting the supply of on-the-job training positions to the surge in demand was inevitably accompanied by a loss of quality and errors in orientation. For economic reasons, the supply of training positions was boosted particularly in the lower-cost training occupations. These were often training occupations with less promising prospects for the future. The demands of young people interested in high-quality training places offering high job security and attractive career prospects could often only partially be met.

Increasing the supply of training positions over the demand, certainly helped to take the strain off the training place market. Nevertheless, for the most part it meant shifting problems to the later stage when the trainees were ready to enter the workforce, as it deregulated to some extent the mechanisms of the training place market as a form of selection of junior skilled staff to fill vacancies in the enterprises.

The training behaviour of enterprises is related to cyclical trends. A reduction in training capacity, as can be observed in the early 1990s, can be risky especially in large

enterprises, as training capacity cannot be easily and quickly increased, when the economy takes an upturn. A shortage of skilled workers can be the consequence (Schmidt, 1993, p. 1 ff).

Since they are legally obliged to admit all trainees, part-time vocational schools financed jointly by the federal *Länder* and local authorities have to adapt their training capacity to the number and job structure of the training contracts that have been concluded within the dual system. The vocational schools' adaptability with respect to numbers is limited: their personnel and space capacity cannot be increased at will, not least because of limited finances. Budget limitations, for the most part, prevent an anticyclical recruitment policy for teachers. Whereas unemployment was prevalent among vocational school teachers in the past, a growing lack of vocational school teachers in a number of subjects has become apparent since the late 1980s. Nationwide pay regulations and service legislation in the federal *Länder* limit the possibility of making the profession of vocational school teacher more attractive.

Individual schools have very little say regarding personnel policy. In addition, the possibilities of transferring specialised teachers from general education schools are limited. Accordingly, fluctuations in the demand for school-based training capacity have to be offset mainly by organisational measures. When the demand for capacity increases, class sizes are usually made larger and/or the number of lessons is reduced. When there is a drop in the number of students, as was the case in the late 1980s, classes are merged. Regional and sometimes even national classes are formed for occupations with very few trainees. And finally, individual schools are sometimes grouped into vocational school centres.

Although the dual system, which is characterised by market regulation of the supply of training positions, proves relatively adaptable to fluctuations in demand, it only achieves limited co-ordination between the sectoral structure of training occupations and the sectoral structure of jobs. Furthermore, when it comes to the composition of occupational structures, the training place market shows itself to be very resistant to structural changes in the economy, especially in the service sector. From an economic point of view, this is an unsatisfactory state of affairs since the mobility (change of economic sector or occupation) needed to offset these discrepancies results in at least a partial devaluation of investment in training. Conversely, it is not necessary, in terms of pedagogy or economical training, that every economic branch or even every enterprise train its own skilled workers to meet its demands so long as this training is conducted in economic branches and enterprises which are able to provide better training by reason of objective circumstances (*e.g.* learning relevance of workplaces, possibilities of professionalising training) (Hofbauer and Nagel, 1987, p. 65).

Another problem of adaptation in the supply of training places lies in the fact that it is oriented to the economic structure of the regions concerned. Rapid economic structural change can lead to shortages of qualified personnel – at least temporarily until enterprises react by offering training for new sectors of production.

In the past there has been no major friction on the labour market – in terms of unemployment or shortage of skilled workers – despite constant structural discrepancies between the occupations young people can train in and the occupations for which there is

demand. The reason for this is the high degree of labour market mobility. Most training occupations open the door to a number of jobs and conversely, many jobs for skilled workers are not dependent on the applicant having trained in a specific occupation.[5] By increasingly introducing broad basic training and regrouping extremely specialised individual occupations into one main group, the policy of reorganising training occupations in the 1980s took into account the increased need for occupational flexibility and mobility.

In the context of a general shortage of apprenticeships, the self-regulatory powers of the training position market cannot guarantee equal opportunities and access to all applicants whatever their schooling, sex or nationality. Additional public intervention has been necessary to alleviate the segmentation and selection effects of the training place market. Efforts have been made to improve the lot of disadvantaged young people in particular and to offset deficits in training places in structurally weak regions.

First, public programmes focused on opening up alternative school-based training for young people who could not find a training place and on improving the chances of the disadvantaged groups on the training market by giving them preparatory training. The marked increase in the number of schools needed to introduce this preparatory training and pre-vocational training year resulted initially in these programmes functioning as a solution to the problem of too few training places on the market – an effect which was not intended by the policy makers. The federal government and the *Länder* only intervened in the training market when the situation significantly deteriorated, by introducing schemes to promote disadvantaged groups and additional training positions in enterprises.

The main objective of these measures was to assist young people who were unable to find a training position. From a regulatory policy point of view, a temporary subsidy for additional training places in enterprises was preferred over further expanding school-based training, which was nevertheless unavoidable in the long run. The background fear was that a publically financed school-based training infrastructure might become too firmly established and that the increased school capacity (classrooms and staff) would not be fully utilised once the decline in the number of school leavers took effect after 1985. On the other hand, direct subsidisation of additional training places in enterprises held the risk that enterprises might adopt a wait-and-see attitude to get whatever public assistance was in the offing. As it turned out, when additional training places in enterprises were subsidised, the public authorities were very reluctant to tie the subsidies to conditions concerning the structure of the training occupations the enterprises offered (Schober and Hochgürtel, 1980, p. 100 ff).

If the State was reluctant to interfere in the control mechanisms of the training place market to secure sufficient training capacity it was above all because in Germany, it is mainly private enterprise that manages the supply of training places and later job vacancies. Thus workers who have trained in enterprises have better chances of being kept on. Once the training position market relaxed again, the State was able to cut down subsidies for the creation of training places in enterprises. However, in view of the continuing discrimination against certain groups of young people, it proved necessary to conserve a training infrastructure parallel to the dual system in the form of publicly subsidised full-time training in non-enterprise training centres for disadvantaged young people. The fact

that the scheme for disadvantaged groups had to be legally entrenched despite the relaxation in the training place market shows that in the absence of state subsidies, trade and industry is only prepared to a limited extent to ensure the training of young people with learning or social difficulties. Employers feel that training the handicapped and those with learning problems is not the main job of industry and they expect financial assistance from the State in these cases (Weegmann, 1992, p. 61).

The public vocational training schemes for unemployed young people alleviated much of the tension on the labour market. However, this did nothing more than delay the employment problems of young people, a problem linked to the overall high rate of unemployment. The "secondary" labour market, essentially publicly funded programmes for job creation, could only create a limited number of permanent jobs for young people who were unable to find work on the "primary" labour market. The same holds true for public programmes which subsidise wage costs of employers who recruit unemployed young people, all the more so since this type of measure sometimes leads to a "take what one can get" mentality and subsidisation effects (Bolle and Büchtemann, 1984, p. 7). In addition, in the long term, enterprises might no longer be willing to employ or provide continuing training to problem groups unless they received public assistance (Schober and Hochgürtel, 1980, p. 96).

In the final analysis, programmes aimed at teaching, consolidating and further developing the qualifications of unemployed young people could only be effective if they promoted their personal capacity to compete in the labour market and be placed in a job – not on a short-term basis of course, but medium-term if possible.

Although the public programmes may have seemed necessary from a socio-political viewpoint in order to alleviate the negative effects of the labour market selection process on certain problem groups and to bridge periods of unemployment, they could do little to actually remedy the deeper-rooted causes for this discrimination on the training place and labour markets. These causes should be looked for not only in the selection mechanisms of the labour market but also in the conditions that breed learning problems and/or poor learning motivation, beginning with family and school socialisation (Schober and Hochgürtel, 1980, p. 98 ff).

The shortage of skilled workers in some occupations and economic branches, which has again become evident since the late 1980s, cannot for the moment be attributed to a failure of the vocational training system to generally supply enough skilled workers. At the end of the 1980s, the number of trainees was still higher than the actual demand for skilled workers in most occupational groups.

The main cause of this – as in the past when shortages of skilled workers occurred – is the migration of many young skilled workers from the occupation or economic branch they have trained in, to other more attractive and lucrative jobs with higher security. Furthermore, a large number of those skilled workers who finished their training in the 1980s ended up in unskilled jobs (Henninges, 1991, p. 48 ff). Well-directed initiatives in continuing training would enable enterprises to reactivate some of the potential qualifications of these workers.

2. Regulating the quality of training

Major challenges

Regarding the regulation of quality, the vocational training system in Germany has had to cope with challenges on several levels since the early 1970s. The most important and most frequently discussed issue in education policy is that of the qualifications necessary to skilled workers, in other words, the minimum level of skill that should be aspired to.

In the 1970s, social and economic change and the debate over improving equality of opportunity in the education system gave rise to demands to raise, broaden and standardize skilled worker qualifications. From the mid-1970s until the mid-1980s, discussions about upgrading and standardising the quality of training were overshadowed by the problem of creating enough training places for school leavers. However, new challenges began to emerge in the early 1980s with respect to the responsiveness of training quality. As a result of technological developments and new demands from the market, large enterprises in particular were favouring new forms of production and work organisation to respond more quickly and in a more differentiated manner to their customers' needs.

The Taylorist organisation of work processes was being replaced with workplaces characterised by multifaceted tasks that made use of new technologies. These work stations were characterised by their flexible design, their versatility, their networking possibilities, complexity and multiple applications. The opportunities for replanning production processes and job profiles, which also concerned the service sector, led to a redefinition of skilled work and thus, in connection with it, to a change in the model of vocational training.

Since then, vocational training has aimed at developing the technical and methodological competence of trainees as well as teaching them social and personal skills. Their training should enable them, as future skilled workers, to master a broad range of specific occupational tasks independently and with initiative and give them a foundation for their own continuing training and for assuming new and changed occupational duties. Since the mid 1980s, demands for greater emphasis on environmental education within vocational training have also been voiced more forcefully.

Parallel with the new challenges regarding skilled worker qualifications, new demands were also being made at the level of learning conditions, which differed greatly depending on the size and the sector of the enterprises. In the 1970s, priority had been given to harmonization of these differences and the definition of minimum standards. In the 1980s, emphasis was given to developing and disseminating innovative solutions and preserving learning opportunities in the workplace, that is, to discover systematically new opportunities.

Young people seeking vocational training were also placing new demands on the vocational training system. Firstly, a far greater number of young people with higher school qualifications, who were thus generally older than their predecessors were starting training. Secondly, more and more young people applying for training were disadvantaged because of cognitive or social learning problems or because as foreigners or

resettlers they had a different language or educational background. Trainees were consequently far more heterogeneous than in the past and this posed serious problems of integration. Finally, a point that became more significant in later years, school leavers were expecting more from the dual system of vocational training and from vocational training generally. They had high hopes that vocational training would give them access to further general or vocational training programmes and to attractive careers.

Main issues in vocational training policy

The Vocational Training Act of 1969 provided an institutional framework at federal level for regulating vocational training. It gave the federal government in co-ordination with the *Länder*, the employers' associations and the trade unions a tool with which the quality of on-the-job training could be regulated and updated to meet changing requirements. The Vocational Training Promotion Act of 1981 modified and complemented the Vocational Training Act and in particular consolidated the supportive role of the Federal Institute for Vocational Training and ensured its involvement in public negotiations and decision-making structures.

The *Länder* individually took measures to adapt training quality in vocational schools. Despite cross-harmonization at the central level within the framework of the Conference of Ministers of Education and Cultural Affairs, policies remained independent, which permitted the *Länder* to respond – with varying degrees of success – to new requirements.

The vocational training measures adopted by the federal government and the *Länder* took into consideration all aspects of importance for the regulation and adaptation of training quality: reform of the training occupations and the contents of on-the-job and school-based training, the organisation and co-operation between training sites, training methods and training resources, the training and continuing training of company trainers and vocational school teachers including measures to ensure a sufficient supply of trainers and teachers, and the examination and certification system. Setting aside the new challenges to the quality of training that have come about over the last twenty years, it was mainly the quantitative challenge facing the training system that determined the nature and intensity of measures adopted. While public attention focused on improving and standardizing vocational training quality in enterprises and schools up to the mid-1970s, the problem of providing enough training places to accommodate all school leavers became central between the mid-1970s and the mid-1980s. It is only since the mid-1980s that vocational training measures have again focused on the issue of quality.

Reform of the training occupations

One of the principal preoccupations of policy since the early 1970s has been the reform of the training occupations. Training occupations in Germany are linked on the labour market, with occupational and exchange patterns that have evolved historically. They "reduce the great number of conceivable combinations for the moulding of individual work skills into common clusters of qualifications which are generally recognised and

legally sanctioned and thus subdivide the labour market into subject areas'' (Buttler and Stooß, 1993, p. 135).

Training occupations therefore fulfil a number of functions that are characteristic of the German vocational training and employment systems:

a) They are specifications for training individual work skills and for practising the job role to be played after completion of training. This function was confirmed in the Vocational Training Act of 1969 in that it states that vocational training should also allow trainees to acquire occupational experience, in addition to knowledge and skills, to enable them to pursue their first qualified jobs.

b) Training occupations fulfil a social function in that they are able to help an individual develop a professional identity by learning a socially recognised occupation.

c) Training occupations fulfil an important information and orientation function for the labour market in that they help to reduce the large number of different gainful occupations and job designations in a useful way, thus leading to a structural segmentation of the labour market.[6]

d) Training occupations and training levels are also important for determining the income that trainees will earn once they enter the workforce.

Successful completion of a training programme does not guarantee trainees a job in their particular field. Nevertheless, if they find an appropriate job, their qualifications assure them income advantages over semi-skilled or unskilled workers. Both in the private sector as in the public service, categories of remuneration are based on a mixture of qualifications and requirement-based features. In addition to higher incomes, a vocational training diploma allows the skilled worker to benefit from a number of social and legal advantages.

- *Establishing negotiation and decision-making structures for the reform of the training occupations*

In spite of the great importance of training occupations for the vocational training and employment systems, the Vocational Training Act of 1969 did not indicate who should prepare the drafts for their reform or who should be involved in the process. The Vocational Training Act only indicated that the training regulations become official through statutory regulations of the Federal Ministry of Economics in agreement with the Federal Ministry of Education and Science. For this reason, in the early 1970s the focus was on establishing suitable structures for negotiating and deciding on training policy with the assistance of the employers' associations and the trade unions.

One particular problem was the involvement of the *Länder* in the co-ordination process since they are responsible for elaborating the curricula for the vocational school part of training. The 1972 ''joint findings report'' outlined the procedure regulating how new training regulations were to be drafted and co-ordinated with the core curricula for the vocational schools in collaboration with the federal government, the *Länder*, the employers' associations and the trade unions.[7] Two aspects of the drafting process for new training regulations were included in the Vocational Training Promotion Act of 1981

which supplemented the Vocational Training Act of 1969: the collaborative role of the Federal Institute for Vocational Training in preparing new training regulations and the obligation to consult the Board of the Federal Institute for Vocational Training in the case of adoption of new statutory regulations, such as training regulations.

- *Diversification of the training occupations and establishment of basic vocational training*

The Vocational Training Act of 1969 provided a few thematic guidelines concerning the reform of the training occupations. It foresaw a broad-based introduction to the occupation followed by specialised training to be given for a period of not more than three years and not less than two years. Likewise, the training regulations were to contain a functional timetable covering the knowledge and skills to be imparted. These core curricula were to provide training enterprises with a guideline for drawing up their own individual training timetables. The new regulations in the 1970s, which varied in scope for the different occupations and occupational fields, tended to have the following results (see also Pampus, 1989, p. 64).

Two-year training programmes, which were relatively common in the early 1970s, were gradually replaced by three-year programmes, thus contributing to a standardization in the level of qualifications. This took into account the higher level required in many occupations. It also reduced the afore-mentioned disadvantages of trainees vis-à-vis the market and collective agreements. The decision in favour of three-year programmes also led to a reduction in the number of stage-based training programmes.

In accordance with the Vocational Training Act, reform of the training occupations was planned to include the implementation of two stages that would be distinct and complementary in their subject matter and time calendar. After the first two-year stage, trainees would be qualified to work in the corresponding occupation.[8] On the basis of this examination, they were to be able to continue on to a second one-year stage, however. Many enterprises offered less training places for the second stage and made access dependent on certain conditions such as trainees' marks in the previous stage. Once three-year programmes became more prevalent, this selection barrier disappeared.

Raising and standardizing the level of qualifications resulted in enhancing the status of vocational training in the dual system as a whole. In the 1980s, the length of training tended to increase to three-and-a-half years, especially in occupations relying on a high degree of technology. The increase in the amount of training contents and the generally more comprehensive range of qualifications were the justification given for this. Even today, there are still a number of two-year training programmes but when training occupations are being restructured, the trade unions no longer accept programmes that last less than three years.

Since the early 1970s, the trend has been a drop in the number of training occupations. Existing training occupations have been abolished, restructured or redefined. The impetus for this came from the Vocational Training Act, which foresaw a qualitative reorientation of vocational training, that is, moving away from narrow specialisation towards broader vocational qualifications and thus to the possibility of deploying newly qualified skilled workers in a wide range of jobs. Consequently, the number of training

occupations has been reduced from about 600 in the early 1970s to 377 in the early 1990s. Nevertheless, craft trades with few trainees have been retained, notably in occupations such as violin-making and diamond cutting, due to their regional importance, their high degree of specialisation and their long-standing tradition.

In parallel with the standardization of qualification levels and the concentration of existing training occupations, new training occupations were established. The first year of these programmes focused on broad-based basic training and specialised contents that could be considered fundamental to several related occupations or to an entire occupational field. Specialised vocational training was to follow later; it concentrated on more specific skills and knowledge, directly related to the occupation. Establishing broad-based basic vocational training signifies a departure from the traditional division of occupations: in the past, occupations were defined principally according to the performance production principle. Accordingly, many occupations, especially in industry, were often comprised of separate tasks (Heidegger *et al.*, 1989, p. 206 ff.) This helped to perpetuate an extreme splintering of occupations and strengthened the concept of skilled work being a series of tasks that had to be executed or performed. In keeping with this, vocational training was primarily a response to requirements set by the employment system. An even clearer departure from this outdated attitude came about in the late 1970s when the term qualification was reinterpreted to mean competence at taking action in one's occupation (*berufliche Handlungskompetenz*).

- *Redefinition of qualification profiles as competence in taking action in one's occupation*

A particularly important step towards upgrading the quality of vocational training was taken in the late 1970s when the employers' associations and the trade unions reached agreement on the redefinition of qualification profiles for skilled workers. In the mid-1980s, a new goal was set for vocational training: competence at taking action in one's occupation. This objective was linked with a number of innovations in contents, organisation and methods.

The traditional dichotomy between knowledge and skills was replaced by the notion of "qualifications" (see the case study on the metalworking occupations in Part II for more details). The introduction of new production concepts in connection with new technologies created less of a need to enrich traditional training contents. The emphasis was rather placed on entrenching cross-occupational qualification elements in training. This included skills such as the capacity to plan, methodological competence, thinking in terms of systems and the interrelation of parts thereof, a sense of responsibility and critical mind, social and communication skills. These qualification aspects, relevant beyond the boundaries of a single specialised occupation, emerged not only in the newly restructured industrial metalworking and electrical occupations and in craft trades. These "key qualifications" were fitted into similar reforms in other occupational spheres, for example, in the commercial occupations.

As illustrated in the example of the metalworking industry, a convergence of opinion among the social partners despite their different motivations, is the basis of successful negotiations on the details of the new qualifications concept (Stratmann and Schlösser,

1990, p. 261 ff). The employers' associations are interested in imparting planning, analytical and especially in the commercial area, organisational skills, which require that more emphasis be placed on conveying personal competencies. The trade unions are equally interested in promoting such personal skills which they see as a way of consolidating employees' position on the labour market and enabling them to play an active role in the design and planning of their work and in the implementation of technology.

- *Taking account of environmental education in the reform of training occupations*

Since the mid-1980s, certain aspects of environmental protection have been increasingly incorporated into the reform of training occupations. In 1988, the Board of the Federal Institute for Vocational Training adopted a recommendation advising that vocational training take into account environmental protection. The parties responsible for vocational training agreed that all occupations were directly or indirectly related to environmental protection (Adler, 1990, p. 8). This was taken into consideration in the training regulations through the formulation of concrete, environmentally relevant skills and knowledge in connection with specialised training contents. An integrated qualification concept is recommended for the future. Its aim is to incorporate awareness of the environmental implications of one's occupational actions as an additional element in all vocational programmes.

- *Criticism of reform measures*

Occasionally, there has been criticism that the procedures for restructuring training occupations, in particular the research and development stages preceding the application for the reform, often take far too long. This is partly because the representatives of the participating professional associations and trade unions have difficulty reaching a consensus on the main points of the intended reform. On the other hand, once this consensus has been reached and a new training regulation passed, the groundwork has already been completed for its acceptance and implementation in enterprises. This would seem to justify the lengthy formal procedure which generally takes two years. The whole procedure can last much longer in the case of comprehensive restructuring preceded by a research stage or when particular professional or political interests are in play.

Since the procedure can be so drawn out, new training regulations can only be altered at relatively long intervals. Today one assumes that training occupations should be updated about every ten years to respond to economic and technical developments and changes in work organisation. This takes into account that curricula innovations take time to become diffused and implemented, a phenomena which is often underestimated in teaching practice. (Pampus, 1989, p. 65). Enterprises' changed economic, technical and work organisational requirements can also be taken into account in a flexible manner in training by leaving open the formulation of the techniques corresponding to the curriculum training contents. Since only minimum standards are stipulated in the respective training regulations, training enterprises are free to provide further training and to teach more comprehensive contents if they consider them necessary. This is generally only

possible in enterprises with an effective education infrastructure, however. Other enterprises have enough trouble meeting the minimum standards.

In recent years, in response to the increasing heterogeneity in the prior education of young people undergoing training, there has been question of whether the internal differentiation of the training requirements of enterprises and the possibilities of individualising training suffice. To date some enterprises have responded to the different educational backgrounds of their trainees by taking steps to differentiate their training internally and by customising their training to the individual. This ranges from special support for trainees with learning problems, to differentiating between trainees according to their prior school qualifications and/or their performance levels during training.

Another measure, which moreover raises the attractiveness of on-the-job training, shortens the length of training for those with higher general education (especially university entrance qualifications). The majority of dual system trainees, who have acquired their university entrance qualifications before starting their training, take advantage of these reductions in training time which the trainees must apply for themselves. (Schober, 1992, p. 173). The opposite, that is, extending the length of training for weaker trainees, is more the exception than the rule, however, and is generally only applied when a trainee fails a final examination.

Recently, there have been calls for a reinforced differentiation in qualification profiles in order to offer more differentiated training in terms of the contents and pedagogy to young people with learning problems on the one hand and particularly talented trainees on the other hand (Schaumann, 1991, p. 6). A debate is currently under way on the theme, "Equality of general and vocational education and training", to consider the possibility of allowing those leaving the dual system to enter higher education, thereby increasing the attractiveness of the dual system of vocational training. While training qualifications from the dual system do entitle their holders to enrol in more advanced vocational training programmes, which in turn can be a stepping-stone to studies at an institute of higher education, entitlement to enrol in higher education programmes at universities or other establishments of higher education depends on a number of other examinations and moreover, varies from *Land* to *Land*.

Revision of the training contents taught at vocational schools and co-ordination with on-the-job training

Two conditions are instrumental in upgrading the quality of training at vocational schools and adapting it to changed requirements. Firstly, the individual federal *Länder* are responsible for training at vocational schools while on-the-job training comes under the jurisdiction of the federal government, as stipulated in the Vocational Training Act. In addition, according to the Vocational Training Act of 1969, (part-time) vocational schooling as one component of the dual system has the function of complementary on-the-job vocational training. This complementary role of school-based vocational training is reflected not only in the shorter time it is allotted (trainees attend a vocational school one to two days a week and spend three to four days a week in on-the-job training). The structure of vocational school curricula also corresponds to on-the-job training with

regard to entrance levels, duration of training and final qualifications. The school curricula are based on the structure of training occupations as defined at federal level.

The fact that the core curricula are drawn up by the committees of the Conference of Ministers of Education and Cultural Affairs and co-ordinated with the training regulations ensures that the curricula for vocational schools are based on uniform federal regulations, even while retaining some minor regional features. Nevertheless, vocational schools have an additional mandate to impart general education which is established as the guiding principle in the school laws of the individual *Länder*. This education mission is reflected notably in the fact that vocational schools teach occupation-related as well as general education subjects. In addition, the general education is supposed to guide the organisation and design of lessons with occupational contents.

The main tools for shaping the contents of school-based vocational training are statutory regulations specifying time calendars for each training year, curricula and the distribution of subject matter. As vocational schools are public institutions, they must guarantee that all young people receive equal educational opportunities. For this reason, it was decided to give all schools within a federal *Land* the same goals of reference to ensure the highest possible teaching quality rather than set minimum standards as is the case with on-the-job training.

In keeping with vocational schools' task of supplementing on-the-job training, it is not surprising that in the last twenty years, teaching contents were updated to take into consideration those aspects that had been judged important in the reform of the training occupations. Thus, in the early 1970s, priority was given to the establishment and institutionalisation of participation, negotiation and decision-making structures. This ensured, on the one hand, the regulatory responsibility of the individual federal *Länder* for the educational contents taught in vocational schools. On the other, uniform regulations were introduced throughout Germany and co-ordinated with the training regulations for on-the-job training.

An important measure in this connection was the "joint findings report" which was adopted in 1972. In this report, the federal government, the *Länder* and the social partners agreed on a procedure to co-ordinate core curricula for school-based vocational training with the training regulations for on-the-job training (Benner and Püttmann, 1992). Although under this procedure the training regulations and core curricula are drafted separately, there is co-ordination in the preparatory phases.

This co-ordination aims, in particular, to identify those training contents which should be taught in the school and those which are better taught in the enterprise, based on the teaching objective and type of education as well as the allocation of training time. In this way, the core curricula that are co-ordinated with the training regulations guarantee a minimum framework for vocational school training which is uniform throughout the country. The individual *Länder* co-operate on a voluntary basis in the core curricula committees of the Conference of Ministers of Education and Cultural Affairs. The results are of a self-binding nature for the *Länder, i.e.* they take them on voluntarily (Stamm, 1990, p. 34 ff.) The Ministries of Education and Culture in the individual *Länder* or institutes responsible for the preparation of curricula translate these core curricula into curricula for the specific *Land*, partly with the co-operation of relevant social institutions

and groups in these *Länder* (employers' organisations, trade unions, teacher associations, parents' associations, etc.).

In addition to the institutionalisation of the co-ordination procedure between the individual federal *Länder* on the one hand and between the federal government, the *Länder*, the employers' organisations and the trade unions on the other, the contents of vocational school training have been adapted since the 1970s in the following way:

- *Introduction of basic vocational training*

The concern to improve the quality of training led to the introduction of broad-based basic vocational training in the 1970s. Basic vocational training affected the programmes as well as the institutions (Wiemann, 1992). With regard to the first, the intention was to de-specialise the first year of training, to organise it according to scientific didactic principles and to defer the final choice of occupation to a later point in the vocational training. This goal was not achieved in the 1970s, however (see survey on basic vocational training in Lower Saxony; IES report, 1991).

Efforts to introduce basic vocational training concentrated first on grouping the large number of training occupations into categories of occupational fields – thirteen in all – and on developing uniform core curricula for the first year of training in the individual occupational fields. The core curricula for basic vocational training which were drawn up during the 1970s presented problems (Kell, 1983, p. 164): basic training was seen mainly as initial vocational training and less in terms of a link between pre-vocational and specialised vocational training. Furthermore, the relationship between occupational orientation and scientific orientation was not clearly identified in the curricula, so that there was no interaction between teaching relating to the occupational field and general education. Thus, teaching relating to the occupational field covered the contents prescribed in the training regulations for the respective training occupations. The general education component within basic vocational training was, however, a reduced variant of traditional, general education as taught at school.

With regard to the institutional aspect of basic vocational training, there were attempts throughout the country to conduct the first year of training entirely at a vocational school and to have this year count towards the training programme. Although the *Länder* introduced such a basic vocational training year for most occupational fields in the 1970s, it is no longer practised in Germany.

- *Co-ordination between school-based vocational training and the restructured training occupations*

From the mid-1970s onwards, core curricula for vocational schools were gradually developed for the entire training programme and harmonized with the corresponding restructured training occupations. Basic vocational training was in some manner integrated into core curricula in those training occupations which were de-specialised and made broader. In most vocational school programmes, curricula has now been co-ordinated with the training occupations.

- *Introduction of the new qualification profile and a more flexible organisation of curricula for vocational schools*

In the 1980s, in parallel with the introduction of new technologies and occupational competence as a new qualification profile, a start was made to examine and revise curricula for vocational schools. Thus, for instance, the work programme of the *Land* of Baden-Württemberg envisaged developing methods for treating new technologies in vocational schools and adapting curricula to technological developments. Two central issues were to be taken into account: the age of the student population, which was increasing, and their different education levels (Ministerium für Kultus und Unterricht, 1987, p. 192 ff). In addition to a greater emphasis being placed on the educational mandate of vocational schools, importance was attached in particular to integration of the qualifications needed to be occupationally competent.

An important aspect in revising the curricula was to give teachers more scope to develop their own teaching ideas. Since the curricula only provided guidelines and broad objectives, teachers were able to define their own detailed objectives for the classroom situation. The individual teachers' scope for action was also extended through the emphasis of a more open teaching aimed at understanding abstract, systematic relations rather than transmitting facts. This gave teachers more freedom to select the concrete contents and methodological and didactic approach. They could also set their own priorities in accordance with the differing educational backgrounds of their students. Moreover, the greater scope for action gives teachers more opportunities to co-ordinate their teaching with the enterprises. It is difficult to judge the extent to which these opportunities are used, and therefore the quality of co-ordination between on-the-job and school-based vocational training. Curricula have been revised for similar reasons in the other federal *Länder* as well.

Adapting the organisation of learning paths by developing extra-plant training centres

The Vocational Training Act of 1969 confirmed at the institutional level the teaching venues that had evolved historically in Germany. The structuring principle is that of a duality of training providers, that is, on the one hand, vocational schools (part time) and on the other, enterprises. Despite the different institutional framework governing schools and enterprises, an increasing internal differentiation and diversification of training venues and learning sites has taken place in the organisation of education (Pampus, 1985, p. 28). While vocational schools have classrooms and training workshops at their disposal, large-scale enterprises can often choose from a full spectrum of training venues run according to various teaching principles. Moreover, extra-plant training centres were introduced in 1969 by the Vocational Training Act to complement enterprise-based training. It was hoped that they would help ensure and/or improve the quality of vocational training and that they would relieve small- and medium-sized enterprises of some training tasks and therefore support their training efforts.

Since the early 1970s, the efforts of the public authorities to improve the organisation of training venues have concentrated on extra-plant training centres. The federal government set up a programme to encourage the development of extra-plant training centres (BMBW, 1973) providing public funds to build and equip extra-plant training

centres, with the individual training providers assuming the operating costs. Over the course of the 1970s, the federal government increased its financial incentives, funding up to 80 per cent of the costs of developing extra-plant training centres and, temporarily, even meeting their operating costs.

Projects were funded according to specific guidelines, the aim being to standardize and improve the overall quality of training. The long-term plan was to develop a country-wide network of extra-plant training centres in Germany taking specific sectoral and regional demands into account. As these financial incentives were tied to quality standards that far surpassed the existing minimum requirements, the response to these public grants was initially slow. The number of places at extra-plant training centres only increased significantly from the mid-1970s onwards. At that time, however, since there was a shortage of training places, extra-plant training centres assumed the role of providing at least basic training to young people who had failed to obtain training places (see Part III, Section 1).

In the late 1970s, the guidelines for promoting the development of extra-plant training centres were altered and then repeatedly reconfirmed in the 1980s (Hauptausschuss, 1986, 1988): extra-plant training centres were only supposed to supplement enterprise-based vocational training and thereby increase the flexibility of training enterprises. In this way, extra-plant training centres can enable individual training enterprises in a region or a sector to provide complete, cost-effective vocational training where they previously could not have done so due to their specialisation. Beyond this, extra-plant training centres can be used to teach certain aspects of enterprise-based training in a more systematic manner using modern technology and teaching resources.

The *Länder* in particular have pointed out that the division of functions and co-ordination of tasks between the three training venues – the enterprise, the school and the extra-plant training centre – could be improved. In practice, however, there is a lack of clear boundaries between vocational schools and their tasks often overlap. Nevertheless, it was deliberately decided to leave open guidelines regarding the duties of extra-plant training centres, the training contents and the proportion of training time to be spent at the centres, in the interest of achieving the greatest possible flexibility in adapting to changing demands. Otherwise, different regulations would have to be drafted for each training occupation, sector and region in question.

Adapting training methods, facilities and resources

The choice of training methods is left up to the individual training enterprises, vocational schools, trainers and teachers. Public measures aimed at adapting methods to new skill demands, training site conditions or target groups are, therefore, essentially proposals. These concern, for example, methodological suggestions, for teaching schedules in vocational schools, advice and help in implementing the new training regulations. They also include the teaching and training aids developed by the Federal Institute for Vocational Training or the trade associations and trade unions. There are also public measures to promote teaching and organisational innovations in learning. To this end, the federal government and the *Länder* provide subsidies for pilot projects conducted in training enterprises and vocational schools. The aim of these projects is to develop new

qualificatory concepts, test them in practice and thus foster new directions and innovative teaching practices.

Since the late 1970s, 17 such pilot projects have been conducted specifically to test new training methods, while others have focused on methodological innovation (Pampus, 1990, p. 240). If one included experimental projects related to training for special groups, appropriate teaching methods for the differing training venues and trainer qualifications, the actual number of pilot projects would be far higher. The overriding goal of these projects has been to reduce the dependence of the training process on the individual trainer or teacher. Although trainers and teachers are free to choose their teaching methods, a relatively rigid method had become widespread at training enterprises, which gave trainers a sense of security and behavioural stability in the way they taught, even when the specified teaching curriculum had changed (Pampus, 1987, p. 44). This method was primarily based on three principles (Bojanowski *et al.*, 1989, p. 64):

- use of the "four-step method" with its fixed sequence of demonstrate/ explain, imitate, correct and practice;
- structuring of the course logically "from the simple to the complicated";
- practice of exercises which artificially simulated work processes.

Pilot projects from the late 1970s onwards sought to extend the traditional range of teaching methods and to test new forms of training which would give trainees greater autonomy in the learning process. The projects took account of changing qualification profiles which put greater emphasis on trainees capacity to plan, carry out and analyse their work independently. Methods worth mentioning in this respect are the Project and "*Leittext*" methods, interactive learning systems, "holistic" training methods and training methods based on the simulation of real situations (Huisinga and Wirtz, 1989, p. 126 ff). In the last few years, studies have concentrated on developing methods that promote learning in the workplace.

It is difficult to assess the extent to which the innovative methods tested in pilot projects are introduced into schools and enterprises other than those where the experimentation took place. Evaluations are quite optimistic concerning the diffusion of innovative methods or, more generally, of innovations in minor aspects of teaching methods that are developed in pilot studies in training enterprises (Pampus 1990, p. 239 ff; Schmidt-Hackenberg *et al.*, 1989, p. 75 ff). It is vital that strategies be developed to publicise the findings of such publicly funded pilot projects among trainers. The Federal Institute for Vocational Training, which supervises a large number of these projects, is also responsible for informing a wide cross-section of experts in enterprises and schools about didactic innovations.

A number of different regulations govern the financing of training sites and their equipment (tools, machines and training materials). Minimum requirements implemented on the recommendations of the former Federal Committee for Vocational Training (Bundesausschuss, 1972), govern how training enterprises are to be equipped. In virtue of these norms, individual training enterprises must be equipped to transmit the knowledge and skills specified in the training regulations. A sufficient amount of training resources and time must be made available to trainees and are to be funded by the training

enterprise. Linking suitability criteria to the training regulations encourages enterprises to adapt their technical equipment and training resources to changed qualification and learning requirements. It is the job of the chambers to assess whether training enterprises have the required equipment and resources.

Furnishing extra-plant training centres with equipment and training resources is very important because it can make up for the shortcomings in the facilities of small- and medium-sized enterprises in particular. Extra-plant training centres have to be equipped in accordance with the type and scope of training objectives and organisational criteria as listed in the catalogue elaborated by the Board of the Federal Institute for Vocational Training to assess training courses in these institutions (Hauptausschuss, 1979).

While from the mid-1970s, focus was on the establishment and development of extra-plant training centres promoted by high public subsidies, in the mid-1980s attention turned to the question of modernising this equipment. Training providers often did not have the financial resources needed to adapt their institutions to changed requirements; this led the federal government to implement a programme of financial incentives between 1986 and 1988 to help provide extra-plant training centres with new technology.

In 1989, the guidelines of the federal government on grants for extra-plant training centres were changed so that at least 50 per cent of the costs of investing in new equipment and modernisation could be met from funds (Kielwein, 1990, p. 9). The remaining costs have to be met by the training providers themselves. The significant point here was that the State considered itself to be permanently responsible for modernising extra-plant training centres and intended to contribute towards making vocational training forward-looking, regionally and sectorally balanced and attractive.

The *Länder* are responsible for equipping vocational schools with teaching and training resources. Individual schools are given funds from the budgets of the Ministries of Education and Cultural Affairs to purchase the necessary resources. These funds are determined on the basis of guidelines on the basic equipment required in individual occupational fields as well as ratios for depreciation, supplementary equipment and modernisation. Changes in the number of students are also taken into account. Special funds are often held in reserve to adapt learning and teaching materials in particular vocational schools to new demands (Düwel, 1991, p. 9).

On the whole, the development of modern training materials for enterprise-based and school-based training is mainly left to the education and training market. The Federal Institute for Vocational Training also develops and promotes innovative materials. Beyond this, large training enterprises compile training materials themselves and sometimes offer them on the market.

Initial and continuing training for in-company trainers

To date, the tasks and activities of those responsible for planning and carrying out in-company vocational training, their working conditions, occupational status and career prospects have not been uniformly regulated. On the contrary, it is up to the individual training enterprises to create the basic working conditions for their trainers according to

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their respective requirements and the possibilities of the company. Consequently, enterprises have come up with a wide variety of solutions.

Some trainers, especially those in large enterprises with their own training departments, train full-time. For most trainers, however, training is one of many activities in their job. Trainers' specialised qualifications and, more particularly, their teaching qualifications differ greatly as well. In the past 20 years, government measures relating to in-company trainers have focused on standardizing and raising the level of their pedagogical and specialised teaching qualifications.

- *Trainer aptitude examination*

The Vocational Training Act of 1969 states that the minimum requirements a trainer must meet in order to work as a trainer are personal and professional suitability. Personal suitability is normally assumed. Trainers are deemed to be professionally suitable if they are at least 24 years old and have passed the final examination in a training occupation that corresponds as closely as possible with that of the future trainees.

These regulations were supplemented in the early 1970s by minimum pedagogical qualifications. Accordingly, all trainers must provide evidence of their professional knowledge and understanding of occupational education by passing an examination at one of the chambers. Similar regulations already existed for the training of prospective master craftsmen. In an effort to standardize the minimum pedagogical requirements for all in-company training, these regulations were extended first to cover trainers in the trade sector, and later those in other economic sectors and the public service.

The contents of the trainer aptitude examination were only generally regulated and the duration of corresponding training programmes was left open. The (former) Federal Committee for Vocational Training did develop, in the form of a recommendation, a core curriculum for training trainers, however, which specified the contents. The provision of courses to prepare individuals for the trainer aptitude examination was not regulated; this was left to the "training market". Various organisations offered themselves as training providers, including the chambers, who were also responsible for administering the examinations. In the 1970s, the State attempted to extend training availability by broadcasting a course on national television, but it failed to attract the anticipated response.

The regulations on the teaching qualifications of trainers gave rise to some dispute. The trade unions, in particular, criticised the regulations for giving individual enterprises too much room to manœuvre insofar as trainers could present their practical training experience as evidence of their teaching ability. Therefore, anyone who had conducted training with practically no interruption for the previous five years could be exempted from proving their aptitude in an examination.

Training enterprises in trade and industry also opposed the requirements of the Trainer Aptitude Regulation during the first half of the 1970s, arguing that these prevented them from offering more training places at a time of a growing shortage of training places. As a result of pressure from the employers' associations, the regulations concerning the aptitude examination, or the conditions of exemption from the examina-

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tion, were relaxed repeatedly in the 1970s. What remained was the "threat" of having to prove aptitude, but the deadline for providing this evidence was extended.

Over the last 20 years, public measures for qualifying trainers have helped to professionalise in-company training staff. The number of participants taking courses and the number taking the examination stagnated until the early 1980s, however, and remained roughly the same as the number of exemptions from the examination. Since the mid-1980s, the number of persons taking the trainer examination has increased significantly.

A new core curriculum for trainers adopted by the Board of the Federal Institute for Vocational Training, takes account of the new demands placed on trainers, which came t light in the 1980s. It recommends that, even in their design, courses take into account t' new role of trainers as mediators of teaching and learning processes so that they promote independence and a holistic understanding of the material. In addition, cou contents were reduced and updated to take the changed demands on trainers and trainin into account. The trade unions, for their part, are demanding that part-time trainers also be required to prove their aptitude.

- *Pilot projects and the development of materials for the initial and continuing training of in-company trainers*

Since trainers have a decisive influence on the quality of in-company vocational training, the public authorities have sponsored numerous initial and continuing training pilot projects for in-company trainers. In the 1970s, these pilot projects focused on developing training courses for trainers, based on practice, which thus met the requirements of the Trainer Aptitude Regulation and covered the contents laid down in the core curricula (Patzoldt, 1980). Later on, many pilot projects were conducted in response to the growing demand for continuing training for trainers, to prepare them to cope with changed qualification demands. More recently, projects have concentrated above all on qualifying trainers to incorporate environmental protection issues into on-the-job training. Most recently, funding has gone to pilot projects focusing on training part-time trainers.

In the 1970s, one pilot project led to the creation of a trainer promotion centre funded mainly by federal grants. Its task was to compile continuing training materials for trainers as well as advise trainers and conduct seminars. The trainer promotion centre was taken over by the Federal Institute for Vocational Training from the mid-1980s onward, and its mission was redefined. Since then, the Federal Institute has been developing continuing training material in the form of seminar packages designed to assist training personnel. Its activities are aimed at enterprises and providers of continuing training for trainers who can use such materials to plan and conduct seminars. In this way, the Federal Institute for Vocational Training introduces in-company trainers to innovations in vocational training (*e.g.* situative learning) and to possible solutions to difficult practical problems (*e.g.* integrating foreigners). The material is user-friendly and directly applicable to the trainers' work. Such assistance helps to raise the level of the quality of these training courses.

Initial and continuing training for vocational school teachers and meeting the demand for teachers

In contrast to the situation of in-company trainers, the activities, working conditions, occupational status and career opportunities of vocational school teachers are more strictly regulated. This is because vocational schools, being public institutions, must abide by the school laws of the individual *Länder* and the regulations governing civil servants and budget law. In the early 1970s, the entrance requirements and training paths for vocational school teachers underwent important reforms.

- *Reforms in vocational school teacher training*

Each *Land* has its own legal regulations governing entrance requirements and training paths for prospective vocational school teachers. The very different models developed in the individual *Länder* for training vocational school teachers in the 1960s were harmonized in a framework agreement reached by the Conference of Ministers of Education and Cultural Affairs in 1973. Its structure is still valid today. Apart from regulating the duration of study, the main stumbling blocks to standardising vocational training were specifying the relationship between general education and vocational training and the relationship between theory and practice in teacher training programmes.

The training programmes for teachers of theory and teachers of practical skills continued to differ with regard to entry requirements, period of study and final qualification levels. Teachers responsible for specialised subjects and general education lessons usually complete a degree programme lasting a minimum of eight semesters. This is followed by one-and-a-half to two years of practical experience as a trainee teacher.

Teachers responsible for specialised practical skills account for about one-third of all vocational school teachers. Their basic qualifications as master craftsmen or technicians are comparable to those of in-company trainers. At the end of the 1980s, approximately 89 000 vocational school teachers were working as public employees. The horizontal differentiation of vocational school teacher training depends on the area of specialisation (*e.g.* metalworking, electrical or commercial occupations, etc.).

As far back as the 1960s, efforts had been made to bring the contents of vocational school teacher training more in line with the contents of general education teacher training. This was expressed in the fact that vocational school teachers were to have the same general teaching objectives as teachers in general education schools (Lipsmeier, 1983, p. 173).

Judging this reform retrospectively, however, vocational educators argued that the teacher training reform had not been brought to a conclusion (Kutscha, 1989, p. 770), that by making a distinction between the theory and the practice, it was not possible to really integrate theoretical and practical teacher training. They claimed that, on the one hand, the practical aspects of disciplines, which were becoming increasingly abstract, were in the hands of teachers who did not have a firm grasp of the theory. On the other hand, practical experience was given too little emphasis in higher education. All in all, they noted that since teacher training programmes had been moved to universities and entry to them was now dependent on university entrance qualifications, and as adult education

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was losing its role as the traditional "supplier" of occupationally experienced students, important links between theory and practice had been lost (*Ibid.*, p. 769).

- *Continuing training for vocational school teachers*

Continuing training courses to adapt vocational school teachers to changed qualification demands are conducted at further training institutions financed by the individual *Länder*. A differentiated system of theoretical and practical further training courses has been developed. This has sometimes involved close co-operation with relevant enterprises in trade and industry with practical and on-the-job training components of various lengths. Although teachers' own continuing training is part of their service obligations, they are not usually obliged to attend specific training courses. More typically, courses have been offered on a voluntary basis and, in the case of particularly extensive further training, teachers can be granted a limited amount of time off teaching.

- *Meeting the demand for vocational school teachers*

Meeting the demand for vocational school teachers was a major problem in the first half of the 1970s and since the mid-1980s. This problem threatens to become much worse in the future. The inflexibility of the system to adapt to demand is partly due to the fact that vocational school teachers are generally civil servants and therefore cannot be dismissed. Vocational school teachers change subjects only in exceptional cases. For these reasons, demand needs to be planned in the very long term.

However, it is difficult to estimate needs, as changes in the numbers of trainees only marginally affect the total number of teachers needed and/or the demand for particular subjects. Likewise, it is not possible, financially, to engage in a policy whereby teachers are held in reserve to ensure that enough are always available: if, at a given point in time, there are enough teachers, the rules of government income and expenditure budget exclude the possibility of employing more teachers (Düwel, 1991, p. 7).

In the past these problems led to an employment policy that was incomprehensible for students interested in teaching at vocational training schools. The insecurity thus created was partly to blame for the dramatic fall in the number of student teachers in vocational subjects during the 1980s. Apart from this, the demand for this occupation is subject to sociological and ideological fluctuations.

The efforts of the public authorities to meet the demand for teaching staff mainly concentrated on making employment policy more flexible. For example, graduates in other fields of study, such as engineering, economics and business management were admitted to preparatory programmes for teaching in vocational schools. This, however, undermined the quality standards set by the reform of the training programmes concerning the hiring of vocational school teachers. The government has also undertaken advertising campaigns to attract candidates to subjects where there are teacher shortages, provided incentives for students to switch to teacher training programmes as well as offered financial incentives. It remains to be seen whether these measures will be enough to counteract the growing shortage of teaching staff and prevent a reduction in the quality of school-based vocational training.

Adapting the examination and certification system

Under the German dual system, three certificates are awarded to trainees upon completion of their vocational training. The most important of these confirms that the trainee has passed the final examination in a recognised training occupation. It is awarded by the chambers, which also conduct the examinations. This "final certificate" is proof of the qualifications attained through on-the-job and school-based vocational training and is thus written evidence of the person's ability to pursue an occupation corresponding to the training. The trainee also receives a leaving certificate from the vocational school and he is entitled to an apprentice certificate from his training enterprise.

- *Standardizing the modes and procedures of examination*

The Vocational Training Act of 1969 stipulates that the examination contents of the individual training occupations are nation-wide legally-binding minimum requirements. The Act also foresaw minimum standards for conducting examinations and for the qualifications of examiners. Examinations are conducted by the examination boards of the chambers which are organised into regional organisational units. Examination boards consist of at least two representatives from the employers' and employees' associations respectively, and one vocational school teacher.

In the early 1960s, the former Federal Committee for Vocational Training issued guidelines to standardize the way examinations were organised and conducted by the individual chambers in order to achieve a higher level of equivalence in the qualifications (Bundesausschuss für Berufsbildung, 1971). The most important section specified the optimal structure of examinations: skills could be assessed from work samples and examination pieces and trainees' knowledge tested in examination by subjects or fields of specialisation. Written examinations were the prescribed method of examination, sometimes accompanied by oral examinations. These federal regulations were kept relatively general so as to give regional examination boards sufficient freedom to take account of local differences in training.

More important for standardizing examinations nationally was the decision to develop and assess examination tasks centrally and sectorally. The intention behind this was not only to make examination practice more uniform but also to rationalise these procedures in view of the sharp increase in the number of trainees since the mid-1970s. Multiple-choice written examinations therefore became more commonplace. The lists of examination questions were developed by national institutes that were often sponsored by the chambers although employees' organisations still influenced how the tasks were set. The examination boards of the chambers were obliged to use these materials in final examinations for occupations in which examination materials had been centrally developed. But this repeatedly led to legal disputes, regarding the responsibilities of the chambers in conducting examinations.

All in all, the updating of final examinations for vocational training led to a system in which the major part of the examination was written and partly multiple-choice, too strong an emphasis was placed on assessing knowledge rather than skills, and tasks were focused more on the organisation of subjects at vocational schools rather than on how the

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work was carried out in practice (Dauenhauer, 1981, p. 330 ff). Beyond this, the examination requirements for the individual training occupations varied due to the multiplicity of regulations (Reisse, 1977, p. 8). In addition to legal regulations, the Federal Ministry of Education and Science also financed a long-term incentive programme to prepare members of chamber examination boards for their job as well as upgrade their qualifications.

- *Standardizing examination requirements and methods*

The strategy introduced in the 1970s to standardize examination practice was extended in the 1980s to cover contents and methods. The Board of the Federal Institute for Vocational Training issued recommendations on how the examination requirements should be structured for the various training occupations, taking account of the reform of these occupations (Hauptausschuss, 1980). There was to be a close link between the examination requirements of the various training occupations and the corresponding learning objectives listed in the training regulations. In addition, the maximum duration and the weighting of the different examination subjects was to be specified, and in the case of oral examinations, the respective weighting of the oral and the written parts.

Further recommendations were related to examination methods. There was, for example, an attempt to discourage the widespread use of multiple-choice tests, which were used for reasons of economy (Hauptausschuss, 1987). By developing recognised examination criteria, attempts were made to calm the debate, that had lasted since the 1970s, and encourage an objective method of designing examinations. Since the second half of the 1970s, when qualification profiles were redefined with emphasis on competence to act in an occupation, debates have focused on the question of whether present examination tasks can adequately assess such personal, complex qualifications. Up to now, the regional examination boards have been left the responsibility of adapting their examination practice to handle these new requirements.

Patterns of regulation and the ability of the dual system of vocational training to adapt to changing skill needs

Regulation of quality in on-the-job vocational training

The quality of on-the-job vocational training is adapted to changed needs by means of the self-regulatory mechanisms of the enterprises in connection with public regulation. Public regulation, which takes place through the intervention of the public authorities, the trade associations and the chambers has, firstly, the function of creating important framework conditions for the behaviour of private training enterprises. Secondly, it functions to improve the quality of vocational training in general by compensating for the shortcomings of enterprises and by promoting the innovativeness of the vocational training system.

- *State intervention measures*

The State makes use of various instruments in its endeavours to exert an influence on the decisions taken by individual training enterprises. One such instrument is the legally binding minimum standard for major facets of training quality. Such legal directives issued by the State include training regulations which relate to the contents and time structures of training courses. Others deal with the suitability of training enterprises and training personnel or with examination contents and examination procedures. With reference to the training resources which should be used, there is only the general regulation that training enterprises must make any necessary training resources available to trainees free of charge. The use of suitable training methods is decided by the training enterprises themselves.

By setting uniform minimum standards for the quality of on-the-job training, a "contractually secure framework" (Hilbert *et al.*, 1990, p. 11) is created, which enables enterprises to predict their investment costs in vocational training more accurately. Such standards guarantee in principle that all enterprises are offering the same minimum level of training.

This regulatory instrument also serves as a way of adapting training quality to changed social demands. Minimum standards also have the advantage of allowing enterprises to focus their training on their own particular skill needs over and above the minimum in order to react fast, flexibly and of their own accord to changed qualification needs, learning site conditions, and the different entrance qualifications and expectations of their trainees.

Over the last twenty years, minimum levels have been standardized in Germany for various facets of on-the-job training and adapted to new requirements where necessary. Attention has focused on defining new training regulations which have laid down and updated training contents and examination requirements. Even though these minimum standards always relate to the regulation of training contents and examination requirements for single occupations or occupational fields, the standardized procedure for elaborating them and the use of standardized criteria help to achieve a large degree of comparability in the regulations for the different training occupations. However, before individual training occupations could be restructured, representatives of the federal government, the *Länder*, the employers' associations and the trade unions involved had to spend years planning and co-ordinating their work. It is now generally recognised that training regulations should be updated every ten or so years.

Unlike regulations on the minimum standards for training contents and examination requirements, those pertaining to the input factors of in-company training quality (in particular the suitability of training sites and training personnel) are less tightly regulated. Furthermore, such regulations do not usually relate to individual occupations or occupational fields but to the entire spectrum of initial vocational training within an enterprise. It is difficult to standardize the input factors given the very different conditions and circumstances across enterprises even within one sector.

Attempts to increase the standardization of input factors of on-the-job training are also limited by the fact that it usually results in higher training costs for the enterprises,

which in turn can have a negative effect on how willing they are to provide initial vocational training. In view of the high number of school leavers the vocational training system had to absorb from the mid-1970s until the mid-1980s, the focus was on encouraging enterprises to offer training places. transition regulation and special regulations granting exceptions were passed in order to allow enterprises the time to adjust to these minimum requirements. As the example of minimum standards for trainer suitability showed, such minimum standards certainly have a regulatory force even when their enforcement is waived temporarily.

The legal directives on regulating the minimum quality of on-the-job training are supplemented at national level by recommendations and resolutions of the Board of the Federal Institute for Vocational Training (until 1976: the Federal Committee for Vocational Training). These recommendations and resolutions contain the joint positions of the federal government, the *Länder*, the trade unions and the umbrella organisations of the employers' associations and the chambers. Because they act as a signal, such recommendations and resolutions on training quality have a real effect on the behaviour of the individual employers' organisations at sectoral level, the individual trade unions, the chambers and their members.

In the last 20 years, the Board has passed a number of recommendations and resolutions relating to quality factors of on-the-job training (Federal Institute for Vocational Training, 1992). These interpret the legal regulations on minimum quality standards and translate them into concrete terms. Since they are intended as cross-sectoral regulations to be applied in all sectors, they play an important role in standardizing and improving training quality.

Unlike the national legal regulations, and the recommendations and resolutions of the Board, other public regulatory instruments are more in the nature of an offer. For example, the State uses financial incentives to promote measures considered necessary to standardize and upgrade the quality of on-the-job training. On the other hand, training enterprises themselves have to show initiative and make their own financial contribution in order to be eligible for public subsidies. The intention behind this is to direct funds into practice-oriented channels where they are needed and to curb an open-hand attitude.

The State's role here is to develop appropriate and standardized sponsorship criteria and to organise, regulate and control the issue of funds. It does not have the strain of planning and carrying out the measures, however. Over the past twenty years, such financial incentive schemes have led to the extension of external training centres and the organisation of pilot projects in particular. The effectiveness of this instrument is shown first by a strong network of modern, well-equipped extra-plant training centres developed during this period. On the other hand, in the last twenty years, a number of pilot projects have been conducted, which have made a major contribution towards upgrading the innovativeness and quality of on-the-job training.

Another regulatory instrument is the provision of information and advisory services by government institutions, in particular, the Federal Institute for Vocational Training. Its information and advisory duties, which focus on vocational training planning practice and in-company and extra-plant training practice, are set by law. The Institute's information and advisory work includes conducting surveys and publishing research findings on new

demands in vocational training and solutions. Another task is elaborating material and aids for use in implementing new legislative regulations, with recommendations and model examples illustrating ways of implementing the contents of training regulations in on-the-job training.

A third task is that of drawing up training material and learning aids for trainers and trainees. Since private providers are also active in this field, the work of the Federal Institute for Vocational Training concentrates – in accordance with the principle of subsidiarity – on those areas not covered by the teaching resources market and/or on those areas which have special relevance for training policy. Attention is often focused on innovative material. The purpose of such information and advisory services is to compensate for the information deficits of individual training enterprises or entire sectors when it comes to designing and updating their training courses to cope with changed demands and thus to help standardize training quality at the new level. Since these services are always on a voluntary basis, training enterprises are free to decide to what extent they should make use of these offers in their training programmes.

- *Trade association and chamber intervention measures*

The Vocational Training Act of 1969 confirmed the position of the trade associations and the chambers, which was already strong, in regulating the vocational training system. The trade associations play a major role in planning and updating quality standards for in-company vocational training. The chambers advise and check the individual training enterprises with regard to how they conduct their training. The employers' associations are strongly committed to vocational training as they run a risk of increased government regulation and higher training costs for their members if the quality of the vocational training system proves to be lacking. Regarding training quality, they have no official means, other than the legal minimum standards, to influence the decisions of training enterprises. But they use their political weight to press for higher on-the-job training quality. Since they themselves are substantially involved in formulating minimum standards and in elaborating recommendations and resolutions of the Board through their umbrella organisations, they can protect their members from excessive public demands regarding training quality.

On the other hand, the position of the employers' associations in negotiating with the State, the trade unions and the education policy makers depends on the quality and efficiency of the vocational training system. This obliges the employers' associations to be flexible and open to change in order to maintain their influence and it gives them elbow room in dealing with their members. As a result, they can also take the offensive when negotiating with them. The employers' associations, like the chambers, use their position (though to a varying extent) to discipline and motivate training enterprises. They formulate "solidarity standards" and explain their own point of view; the effect of this should not be underestimated when it comes to upgrading the quality of on-the-job training and adapting it to changed requirements (Hilbert *et al.*, 1990, p. 119 ff). Even though the trade unions do not have the same opportunities for influencing training enterprises as the employers' associations, they nevertheless use their rights of participation, especially when quality standards for on-the-job training are being elaborated. In

addition, they maintain close links with pressure groups, works representatives and union shop stewards in training enterprises so that they are well-informed at an early stage about any deficiencies in on-the-job training quality and about measures which might be necessary to adapt this training to changed requirements. Their influence varies, however, depending on the degree of trade union organisation in the individual sectors and enterprises.

Measures to standardize and upgrade the quality of on-the-job training are supplemented by the training provided by the employers' associations and the trade unions themselves (Streeck *et al.*, 1987, p. 94). Noteworthy in this regard are train-the-trainer courses, training employers' and employees' representatives on the regional examination boards and, in the case of the trade unions, courses for training works council and youth representatives about vocational training issues. Over and above this, the associations support training enterprises through information directed at implementing updated quality standards in training practice.

At regional level, the measures of the trade associations are supplemented by those of the chambers, who are authorised by law to supervise on-the-job training. An important "control" instrument is the final examinations they conduct for vocational training courses. If the trainees from a particular training enterprise have a record of very poor results, this can be grounds for the chambers to investigate whether the training enterprise is maintaining its quality standards. As another means of quality control, training counsellors appointed by the chambers carry out inspection duties and provide information and counselling.

All in all, the trade associations and the chambers in Germany contribute considerably towards upgrading the quality of on-the-job training. The trade unions in particular favour greater standardization of training, however. The activities of the employers' associations, the trade unions and the chambers relieve the State of the difficult tasks of estimating what quality of training will be needed and of finding compromise and reaching consensus (Streeck *et al.*, 1987, p. 96). At the same time, the expertise available in the trade associations and chambers, is mobilised, which in turn helps to improve the standard of public intervention in the overall planning of on-the-job training (*Ibid.*, p. 96).

- *In-company self-regulatory mechanisms for organising training*

Despite the intervention of the State and the trade associations in standardising and upgrading the quality of on-the-job training, in practice the manner in which training is conducted depends in the long run on the cost-benefit considerations of individual enterprises. Thus, while the quality of training in some training enterprises might far exceed the minimum legal standards, the training quality in others might temporarily fall below this level because it is very difficult for the chambers to maintain this control of quality.

By providing above-average training, which generally implies higher costs, an enterprise benefits from trainees that are better qualified and can be deployed in a variety of functions on the shop floor. This assumes that trainees do not leave the enterprise upon completing their training, however. Not only is an enterprise's decision on whether or not to provide training a difficult one in the first place; once it does opt to train, it is faced

with a "rationality dilemma" regarding the quality of the training it will provide. Based partly on training practices elsewhere, companies must decide whether investments in high-quality training will pay off or whether it might find comparably qualified personnel on the labour market. The intervention measures of the State, but also, especially, the trade associations, can ease this dilemma but cannot resolve it.

Apart from such in-company cost-benefit calculations, trainers and different interest groups, especially in large enterprises, also influence the way training is defined. The quality of their training serves to convince the training departments and professional training staff of the efficiency and importance of the company's own training over other forms of on-the-job training or personnel recruitment. The works councils and the youth representatives generally strongly favour maintaining as high a training level as possible.

Upgrading the quality of on-the-job training is normally an important issue of concern to the members of the works council (Streeck *et al.*, 1987, p. 22). They believe that staff interests are best represented by creating a potential of well-trained skilled personnel who will ensure the efficiency and responsiveness of the company vis-à-vis competitors. An in-company training policy oriented towards the future also prevents the works council from having to approve the dismissal of insufficiently qualified staff. Good in-company training quality is one way in which a company can project and promote a corporate identity both within and outside the company, at local and regional level. In addition, at times when fewer young people are seeking training places, high-quality training courses are a means for individual training companies to attract recruits. The reverse also applies: market mechanisms ensure that enterprises offering inferior training are eliminated from the vocational training system for lack of trainees.

Small- and medium-sized enterprises ensure the quality of their training through forms of inter-company and/or extra-plant (external) training at local or regional level. It is common to both forms that shortcomings in the training curricula of individual enterprises are offset by training stages dealing with specific topics for a specific period of time in partner enterprises of a training syndicate or at external training centres. Such collective forms of on-the-job training assume a balance of interests between the training enterprises involved and/or with the institutions running the respective external training centres. The regional and specific occupational aspects of external training allow the courses to be tailored to the individual enterprises' training programmes. Thus, external training centres are able to supplement the activities of enterprises and adapt the training they provide to changed demands for qualifications, to conditions at the learning sites and to different target groups.

Beyond the legal minimum standards, training quality varies greatly. This is a result of the mechanisms that prevail in the individual training enterprises for regulating training curricula. Discrepancies in the quality of training exist in particular between large-scale enterprises and small-and medium-sized ones, between enterprises with high-quality curricula and a corresponding technology park and those with a more traditional approach, and between the individual training occupations (Damm-Rüger *et al.*, 1988, p. 19 ff).

Regulation of quality in (part-time) vocational schools

The quality of training in vocational schools is upgraded and adapted to changed requirements mainly through measures taken by the individual *Länder*. Unlike training enterprises, individual vocational schools have very little influence on regulatory mechanisms. The steps initiated by the *Länder* are aimed at standardizing the training quality among the individual vocational schools as well as at improving and adapting training quality. As vocational schools are run and financed by the *Länder*, they must provide equal educational opportunities to all students.

Centralised regulatory mechanisms of the *Länder* for standardized upgrading and adaptation of training quality in vocational schools include legal regulations and decrees issued by the Ministries of Education and Cultural Affairs or administrative regulations of the respective school supervisory boards. In addition, allocating and providing funds from the budgets of the *Länder* is an important way of controlling quality.

Legal regulations, in the form of curricula, relate to the theory, skills and contents of general education to be imparted by vocational schools. On the whole they do not deal with minimum standards, as applied to control the quality of on-the-job training, but rather with generally applicable standards for the contents and timetabling of lessons at vocational schools. Even the way in which lessons are organised is regulated by legal provisions. Students at vocational school are grouped according to their year of training and their individual occupational field or training occupation. The lessons are differentiated according to the individual subjects. Other regulations relate to the forms of standardized evaluation of students' performance and standardized assessment procedures.

Vocational school facilities are regulated by guidelines issued by the Ministries of Education and Cultural Affairs. Since the buildings and facilities of vocational schools are financed by district and municipal authorities, there can be differences in the quality of facilities among schools.

Regulations pertaining to teaching personnel govern entry into the teaching profession, training paths, working conditions, remuneration and career opportunities. No requirements exist concerning the teaching methods to be applied at vocational schools.

The quality of vocational school training is essentially controlled by the provision of funds from the budgets of the *Länder*. They serve to finance teachers' salaries in particular. Regulations on class sizes and teacher-student ratios help to achieve comparable conditions among the individual vocational schools and classes.

The quality of school-based vocational training and its responsiveness to changing requirements greatly depends on the political and administrative decisions taken by the Ministries of Education and Cultural Affairs in the individual *Länder*. In spite of the decision-making autonomy of the *Länder*, a minimum of quality standardization of school-based vocational training is attained throughout the country through voluntary framework agreements which are, necessarily, unanimously agreed upon within the Conference of Ministers of Education and Cultural Affairs. This applies in particular to the co-ordination of curricula among the various *Länder* through core curricula, which, moreover, are also co-ordinated with the contents and time schedules of the training regulations for on-the-job training within the framework of the restructured training

occupations. Nevertheless, the individual *Länder* still have considerable scope to manœuvre within these framework arrangements regarding specific details of vocational training and education.

Before taking their political and administrative decisions, the Ministers of Education and Cultural Affairs hear the opinions of the *Länder* committees for vocational training made up of representatives of the employers' associations and the trade unions. Although the social partners would be able to influence the elaboration of curricula, they rarely do. As the social partners can influence matters at both federal and sectoral levels, the *Länder* committees are of lesser importance to them in asserting their interests (Streeck, *et al.* 1987, p. 20).

The Ministries of Education and Cultural Affairs draw on various committees and special working groups in their decision-making processes. The municipalities, general education schools, parents and the churches are represented on these bodies alongside representatives of the social partners. Including wide sectors of the economy in decision-making processes also helps to maintain the autonomy of vocational schools within the overall vocational training system.

Legal regulations, decrees and administrative provisions are not the only tools used to influence the quality of school-based vocational education. The information and counselling services of the ministries, school administrations and curricula institutes attached to the ministries have the same aim. Their services focus on the contents of the curricula and on methods for teaching these, on preparing teaching materials and also on fostering regular contact between school supervisory boards and school directors and teachers. As well as providing information and counselling, such contacts are intended as a way of ensuring that vocational schools maintain quality standards.

The continuing training of teachers is a most important means of upgrading and updating the quality of vocational schools. Institutions run by the *Länder* themselves are charged with this task. These provide a wide and differentiated range of continuing training courses. In some *Länder* teachers are obliged to attend continuing training, in other *Länder* it is optional.

Another instrument the *Länder* can use to control quality are financial incentives for vocational schools to conduct pilot projects. Just as similar experiments in enterprises are intended to promote innovative on-the-job training, these pilot projects aim to promote innovations in school-based vocational training. Since such pilot projects normally have national significance and are partly subsidised by the federal government, decisions about them are made by the Education Planning and Research Promotion Commission of the federal government and the *Länder* as the body which co-ordinates education policy between the federal government and the *Länder*.

The scope that individual vocational schools have to respond to changed circumstances is mapped out in the binding standards prescribed in each *Land* for the main aspects of vocational training. Nevertheless, legislation ensures that there is also scope for decentralised decision making. The school constitution is important in this context. It regulates the rights of the students, parents and teachers who are directly involved. Teachers, training enterprises and political decision makers are represented in various activities and working groups at local and regional level as well. It is their job to balance

local and regional demands, educational requirements and national regulations in such a way that they enhance the quality of vocational training in schools.

In the last twenty years, individual federal *Länder* have conducted a number of projects designed to update the quality of training in vocational schools. These improved personnel and material conditions in vocational schools as well as the academic and scientific aspects of commercial/industrial teacher training. They also dealt with the introduction of basic vocational training and with updating and adapting curricula.

Problems adapting school-based vocational training appeared in the 1980s following introduction of the new qualification profiles in the restructured metalworking and electrical occupations as well as in the commercial sector. However, the individual vocational schools only have limited responsibility for this situation. On the one hand, they must orient their teaching to examination practices, which generally still took a more traditional approach and thus had a standardizing effect on the teaching. On the other hand, there are shortcomings in initial training and continuing training for teachers. Particular attention should be drawn in this connection to the lack of an independent didactic programme of training to help teachers implement the requirements of teaching occupational competence in vocational schools. In addition, the shortage of vocational school teachers became more acute in the 1980s resulting in the cancellation of many courses.

Major mechanisms of quality responsiveness

In the German vocational training system, the responsiveness of training quality to changed requirements takes place through an interplay of public regulatory measures and the decisions of training providers on what training they will provide and how they will provide it. The innovative responsiveness of the system is mainly guaranteed through the openness of public regulations. On the basis of minimum standards laid down by the State, on-the-job training practitioners decide on the extent and the manner in which they will use the principal resources of on-the-job training quality, namely money, expertise and close relation to practice.

A driving force behind the adaptation and further development of training quality is the way in which large enterprises organise and conduct their training. Considerations on how their training will be run are the outcome of long-term, strategic decisions that go hand in hand with high costs for them. For this reason they follow a forward-looking training policy so that they can take changed demands for vocational qualifications of skilled workers into account at an early stage. They benefit from new technology earlier than is the case in small- and medium-sized enterprises. They also have specialised training departments at their disposal with full-time professional personnel who, by virtue of their job experience over the years, are able to implement new requirements into training practice. These factors are another major reason why large enterprises are quicker than small- and medium-size enterprises to react to public offers and incentives to upgrade their on-the-job training and introduce innovation.

Important innovations in the quality of on-the-job training can be traced back to the activities of training departments in large enterprises. Such innovations include, in particular, training to develop and promote competence in pursuing one's occupation, which has been a guiding principle for the further development of vocational training since the

mid-1980s. Even though small- and medium-sized enterprises can often make only limited or no use of such developments because of structurally different training conditions, these development efforts of large enterprises nevertheless set quality standards and highlight trends for organising future-oriented on-the-job training.

The formulation and the manner of altering the minimum quality standards set by She state reinforce the efforts of trainers to adapt training to new conditions. This applies in particular to the training and examination requirements laid down in the training regulations. Quality standards are a way of recognising what has become current training practice in the majority of plants providing training; once a quality standard has been established, it is difficult to implement a lower level. One example of this guarantee of quality-effect is the fact that the trade unions do not agree to restructuring training occupations unless training lasts a minimum of three years. Higher quality is also achieved as a result of quality improvements, which have been tried and tested by progressive companies and have become binding for all training enterprises in a particular sector. In this respect, quality standards and development trends set by large enterprises (or other enterprises particularly committed to training) become points of reference.

Representatives of these training enterprises are often active members in the corresponding trade association bodies and the committees involved in decisions on vocational training policy. Here, they express and defend their view of efficient and forward-looking vocational training. This tendency to support innovative trends is well illustrated in the committee of experts charged with drawing up new training regulations. The representatives of the employers' association and the trade unions often tend to push to a higher level the objectives and requirements of the occupations under reform (Streeck *et al.*, 1987, p. 18). It is then up to the individual trade associations to judge whether the average enterprise in the sector would be able to comply with these high quality standards or whether the standards should be lowered.

This trend of improving quality through future-oriented quality standards, has emerged since the mid-1980s, especially in connection with the restructured metalworking and electrical occupations and also with increasing importance being attached to environmental protection issues in vocational training. While large enterprises in particular have reacted quickly and spontaneously to the new technology requirements by introducing new qualification concepts, many small and medium-sized enterprises have not been in a position to do so. To some extent the new training regulations were far in advance of training reality in many enterprises. The result was that some enterprises simply ceased training altogether while others raised the quality of their training so as to comply with the legal minimum standards.

Large enterprises or enterprises particularly committed to training have played a major role in improving the quality of vocational training. As a consequence, new standards have been set for school-based vocational education. These norms are important when vocational school core curricula are harmonized with on-the-job training regulations and the vocational schools must integrate them in an appropriate manner.

The development and dissemination of new quality standards are certainly fostered by the training ethos which is characteristic of Germany. This is based on a long tradition and the widespread conviction among actors in the vocational training field that work

training is vital to the economic and social development of the country. This training ethos is reflected in the image which full-time trainers and, in particular, master craftsmen, have of themselves. Opinions and ideas about high-quality and future-oriented training are exchanged and disseminated in various ways. The activities of the chambers, trade associations and public institutions play a significant role here as they organise conferences on various aspects of training practice and produce publications for different target groups.

The exchange of experiences is also fostered in discussion groups at local, regional and sectoral levels in which vocational school teachers sometimes participate. Finally, the institutionalised and mainly publicly funded vocational training research institutes should be mentioned. They co-operate with training practitioners to elaborate and disseminate new concepts and formulas for the further development of vocational training

3. Decision-making structures in vocational training policy

Because of the elasticity of its internal structures, the dual system can adapt surprisingly quickly to changing demands. However, as the previous part has shown, the self-regulatory forces of the training system do not always suffice when it comes to coping with new challenges. In such cases, vocational training policy must take innovative measures to ensure that the training system maintains its efficiency under changed circumstances.

The effectiveness and flexibility of the structures and procedures used to elaborate education policy have a decisive influence on the success, within a reasonable period of time, of any modernisation process. It is therefore essential for the dual system to conserve its capacity of adaptation in the medium and long term, that the State and the social partners co-operate and reach agreement on an education policy.

Basic structures regulating education policy

The central problems that need to be addressed in policy regulating the dual system are:

- the capacity and quality of the vocational training on offer largely depend on the propensity of the enterprises, mainly private, to volunteer to train people;
- if training enterprises were to act solely in response to cost-benefit calculations, the training offered would probably not do justice to important social and economic criteria.

Germany is evolving towards a situation in which enterprises provide training that corresponds, quantitatively and qualitatively, to the objectives of national education policy. This is being achieved mainly through the interplay of public regulations and self-regulation by trade and industry. The role of the trade associations goes far beyond simply representing members' interests in negotiations with the public authorities. It

could even be said, that the social partners decisively influence the definition, implementation and assessment of minimum standards for vocational training in enterprises.

Involving the associations has a number of advantages for national vocational training policy: the associations' expertise can be used as a basis for the State's decisions. By transferring the role of regulation to the employers' and employees' associations, the State relieves itself of the difficult tasks of finding compromise and achieving consensus and thus saves itself considerable expense.

The umbrella organisations of the employers and the trade unions contribute to a better understanding of the issues related to vocational training. They organise discussions, initiate decision-making processes within their affiliated associations and work internally to harmonize the different interests and approaches of these associations. Individual associations are not, however, subordinate parts of the umbrella organisations. The largest branch associations considerably influence the opinions formed in the central organisations.

As the associations reach agreement amongst themselves, the State is generally spared the politically risky task of choosing between different proposals from the same camp or negotiating a compromise. Delegation of regulatory tasks to trade associations is most prevalent in areas where the State decrees that consensus between employers' associations and the trade unions is a prerequisite for public regulation, as in the case of regulations for training occupations (Streek *et al.*, 1987, p. 95 ff). It is largely due to their considerable organisational and financial resources that the German employers' associations and trade unions can relieve the State of its regulatory responsibilities.

Since the Vocational Training Act of 1969 gave trade unions the right to equal representation on all the federal and *Länder* committees competent to regulate vocational training, the trade unions and employers' associations are, officially, equal partners in national vocational training policy. Nevertheless, the employers' associations play the key role since the training enterprises bear the main responsibility for conducting and financing vocational training within the dual system.

The self-regulation of organisations involved in vocational training not only relieves the State of the costs and risks that would be inherent in its own intervention. The participation of the social partners in the regulatory process is indispensable for the effective management of the dual system of vocational training: if the market were the only regulating factor in vocational training, there would be a risk of erroneous choices. At the same time, any attempts by the State to regulate a vocational training system on its own would soon encounter serious systemic limitations.

The participation of the social partners in the national regulation process helps to ensure that the different levels of performance of individual sectors or groups of training enterprises are taken into account when complying with the minimum standards considered to be acceptable in training. It also helps limit the tendency to create sector-specific vocational training systems.

Institutions which co-operate and reach agreement on education policy

The co-operation and agreement among all those involved in planning vocational training policy is based on a relatively differentiated, though stable enough structure of institutions. Committees with equal representation were set up at national, *Land* and regional level on the basis of the Vocational Training Act of 1969. This does not mean, however, that these committees are organised hierarchically, since each committee is allocated its own tasks that seldom directly relate to the tasks of other committees (Raddatz, 1990, p. 347). Apart from these legally-defined bodies, there are informal and more specific forms of co-operation between individual institutions that might be consulted and between the different levels (national, *Land*, regional) which have a say in the regulation of education.

The national committee is the Board of the Federal Institute for Vocational Training (BIBB). The federal government, *Länder* governments and the employers' and trade union's umbrella organisations are represented on it, each with the same number of votes. The Board's most important political function is to advise the federal government on fundamental issues in vocational training. Within the framework of the procedure to restructure occupations, the Board recommends to the competent federal minister – following the votes of the employers' and employees' representatives – that the training regulations be approved.

The Board acts as the "collective address" for all important issues on vocational training by functioning as a discussion forum where all interested groups can express and form opinions and reach consensus on vocational training. In this capacity, the Board also elaborates proposals for promoting vocational training in practice. The Board is also the highest decision-making body of the BIBB, whose job is generally to promote enterprise-based initial and continuing vocational training.

The social partners are involved in many other aspects of the work of the Federal Institute for Vocational Training, which is financed by the federal budget (*e.g.* as specialists for research projects and in developing new vocational training regulations).

By virtue of its composition, the Board of the BIBB aims to reduce differences in sectoral and regional developments in vocational training. Although the Board is officially only responsible for the "enterprise" side of training within the dual system, it also permits the federal government and the *Länder*, as well as the *Länder* and the social partners to exchange views on basic issues of vocational training policy.

The effectiveness of the Board is restricted by the fact that the groups within it can only be partially integrated. This applies especially to the *Länder*, which, according to the Constitution, have exclusive responsibility for vocational schools within the dual system.

The federal government is not obliged to act on the Board's advice on fundamental questions of vocational training policy. Important negotiations between employers and employees sometimes take place outside the Board as well (Raddatz, 1990, p. 348).

Vocational training committees with an equal number of representatives from employers, employees and the highest *Länder* authorities have been set up in each federal *Land*. The main task of these committees is to advise the *Länder* governments on vocational training. "In the interests of a uniform system of vocational training", these

regional committees are invited to "foster co-operation between school-based training and the training provided in accordance with the Act and try to ensure that due regard is given to vocational training in the reorganisation and the expansion of the education system" (Vocational Training Act, Section 55, § 2). This includes problems in implementing restructured training occupations and co-ordinating school-based training with that conducted in enterprises.

At district level, vocational training committees have been set up in the chambers. All the enterprises in any one district must be members of the chamber for their particular commercial sector (*e.g.* chamber of industry and commerce, chamber of handicrafts). Six employers', six employees' and six vocational school representatives sit on the committee of each chamber. The representatives of the vocational schools only have an advisory vote as the committees alone are responsible for vocational training in enterprises. The vocational training committees must be informed of all aspects of vocational training and their opinions must be heard. They also decide on the legal stipulations governing how vocational training is to be carried out, which the chambers issue in accordance with the Vocational Training Act (*e.g.* regulations on intermediate and final examinations). Although there is equal representation, the employers' representatives are in a more advantageous position than the employees' representatives, since all decisions made by the committee affecting costs (*e.g.* setting up and financing extra-plant training centres) need to be ratified by the general assembly of the chamber.

The general assembly is comprised solely of representatives of the employers, except in the case of the chamber of handicrafts, in which one-third of the seats is reserved for representatives of journeymen, *i.e.* employees. Decisions of the vocational training committees can be amended or even annulled by this non-tripartite body (Münch, 1987, p. 79 ff.) For this reason, the trade unions are demanding that the competences of the vocational training committees be extended to include the tasks that have up to now been left to the general assembly and/or the management of the chambers. Besides enabling them to take decisions that have a financial impact, it would also allow them, in particular, to have a say in the chambers' supervisory function in training enterprises (Raddatz, 1990, p. 349).

At the sectoral level, only the Industrial Chemical, Paper and Ceramics Trade Union and the Organisation of Employers' Associations of the German Paper Industry had set up, by the end of the 1980s, vocational training councils with equal representation. These councils are responsible for exchanging information and experience, working out common goals and views on vocational training policy, elaborating proposals to promote vocational training and advising and taking decisions on the development and further development of initial and further vocational training regulations (Paritätischer Berufsbildungsrat, 1989).

The most important committee for harmonization between the individual federal *Länder* is the Standing Conference of Ministers of Education and Cultural Affairs. Decisions on concrete aspects of vocational training policy must be unanimous. Because the ministers are obliged to reach a consensus, controversial issues sometimes result in time-consuming negotiations or a deferral of decisions. Legally, decisions made by the Standing Conference are recommendations to the parliaments of the *Länder*, which

usually follow them (Max-Planck-Institut für Bildungsforschung, 1990, p. 58). Framework agreements of the Standing Conference concerning full-time school training or the core curricula for the part-time vocational schools are a vital instrument in creating uniform school-based vocational training.

It is becoming clear that these committees, whose existence is guaranteed by the law, exist to provide "horizontal" co-operation at the different levels responsible for regulating education policy. In contrast to this, most "vertical" co-operation and harmonization occurs outside the joint committees, within the structures of the State, the chamber associations, the employers' associations and the trade unions.

Principles underlying co-operation and agreement among those responsible for education policy

The distribution of competences and the decision-making structure of the dual system of vocational training are complex. This is because the State (the federal government, the *Länder* and regional public bodies), the chambers, employers' associations and trade unions are jointly responsible for ensuring that training meets the quantitative and qualitative demands of society and the economy, and because a large number of people and groups are involved in the regulation of the vocational training system at national, regional, sectoral and local levels.

On the one hand, this highly differentiated system of regulating training policy allows the multi-faceted problems associated with regulation to be dealt with sensitively by specialists. On the other hand, a high level of agreement and co-operation is needed to achieve a minimum of coherence and uniformity in vocational training policy.

The basic pattern of co-operation on vocational training policy in Germany differs significantly from that of other countries because of the principles that underlie this co-operation:

a) The relationship between the State and the private sector is characterised by the tradition of a "policy of consensus", which is typical of the political culture of Germany as a whole. This is particularly noticeable in the far-reaching degree to which relevant social groups are drawn into political decision-making processes. It can also be seen in the way (described above) that the State allows social groups to administer their own affairs insofar as they do not conflict with public interests (Streek *et al.*, 1987, p. 3). However, in the case of difficult and controversial problems, the respect for this principle of consensus can cause considerable delays or even block the introduction of new regulations.
In any case, the social partners strongly reject federal government proposals for simplified and quicker participatory procedures of modifying vocational training regulations in response to new requirements, primarily because they fear that it would curtail their influence. Furthermore, the extensive involvement of the social partners greatly enhances the acceptance of state regulations in vocational training. Hasty state measures are also avoided, as are the "stop-and-go policies" frequently seen in other countries.

The social partners are at the same time also involved in the most important vocational training committees at federal, *Länder* and chamber levels and in institutions. Although these institutions do not deal directly with the vocational training system and do not specialise in vocational training, they have close ties to it (*e.g.* committees of the Federal Labour Office), and thus help to co-ordinate vocational training policy with employment policies, among others (Streek *et al.*, 1987, p. 100 ff).

b) Despite differences of opinion and different interests, the relationship between the social partners in vocational training is characterised by a relatively strong willingness to co-operate on the various issues. Because they can negotiate compromises on objectives for vocational training without state arbitration, the social partners legitimate the principle of the great autonomy of their associations in vocational training matters. One example of this is the reorganisation of training occupations, for which the competent employers' associations and trade unions negotiate the "cornerstones", sometimes with only limited state intervention. The predominant role of representatives from the sectors of activity and of experts from both sides helps to keep negotiations objective and thereby reduces conflict. Persistent differences of opinion between the social partners or within the two camps (*e.g.* between umbrella organisations and sectoral associations) can, however, delay important modernisation processes.

It is noteworthy in this respect that, German trade unions, largely due to their structure (nonpartisan industry-based unions, sectoral trade unions), contribute positively towards broadening and developing the quality of vocational training. Unlike their British counterparts, German "trade unions do not use their influence to restrict training in order to keep the wages of skilled workers high; rather they are all in favour of upgrading both the quantity and quality of training" (Streek *et al.*, 1987, p. 3).

c) The relationship between public agencies working on vocational training policy at central, regional and local levels is characterised by federalism. This results in a unique mixture of centralised and decentralised regulatory competence. Local initiatives do not benefit from the importance they enjoy in Anglo-Saxon countries, nor does the central level dominate as strongly as it does in France. The capacity of the vocational training system to adapt largely depends on the balance between uniformity at the national level and diversity at the local level. This balance is preserved by uniform minimum standards set by the State in different fields of knowledge that allow vocational training to adapt, within certain limits, to local or enterprise-specific needs.

This federalist organisation, leads to a division of tasks among the different governmental levels: on the basis of the Vocational Training Act, the federal government defines the general framework and the objectives and contents of enterprise-based vocational training. School laws of the *Länder* regulate training at part-time vocational schools. The fact that the Vocational Training Act only applies to enterprise-based vocational training is often seen as a weakness that is detrimental to attempts to organise and co-ordinate school-based vocational training with enterprise-based vocational training (Raddatz 1990, p. 344). The

individualisation of responsibility for setting standards in the dual system implies that a high degree of co-ordination is required between the federal government and the *Länder*.

To ensure the necessary harmonization, voluntary agreements must be concluded between the federal government and the *Länder* (*e.g.* by setting up a committee to harmonize regulations governing enterprise-based vocational training with school core curricula on the basis of the "Joint Findings Report" of 1972). However, such agreements cannot be binding for the legislative bodies of the federal government and the *Länder*. On the whole, the *Länder* place strong emphasis on preserving their competences and are sensitive to proposals that these should be curtailed in the interests of greater overall national uniformity. As the federal government and *Länder* have different regulatory competences, co-operation is indispensable, though not always problem-free. Although the procedure to co-ordinate vocational training regulations with core curricula now runs relatively smoothly, new difficulties always require significant co-ordination. Matters are sometimes complicated by insistence on a strict adherence to respective responsibilities. Thus shortcomings in co-ordination between the different bodies became apparent in the 1970s and 1980s when new programmes had to be developed to respond to a shortage of training places and high youth unemployment (Enquete-Kommission, 1990, p. 49 ff).

The relationship between the federal government and local bodies on questions of vocational training in public educational institutions is determined by what is known as joint financial responsibility, by which the *Länder* meet most of the personnel costs and the communities and districts meet the material and investment costs. As a rule, the competent local bodies are consulted before the Ministries of Education and Cultural Affairs make any decisions concerning them. In most *Länder*, a school development plan forms the basis on which vocational schools carry out medium-term adaptation and/or develop their capacity and training programmes.

Due to its relative stability in terms of institutions and personnel, this complex system of co-operation on vocational training policy, on the whole, provides a good foundation for permanent political dialogue. However, because of the extensive involvement of the social partners, federal state structures and the widely-observed principle of consensus which obliges the parties to reach an agreement, decisions can be delayed if a major clash of interests occurs.

Planning and research as aids to making policy decisions in vocational training

A comprehensive system of medium- and long-term planning of education does not exist in Germany. Retrospectively, it can be seen that attempts to introduce such a system in the 1960s and 1970s failed both conceptually and politically. "A Master Plan for Education", proposed in 1973 by the joint Federal-*Länder* Commission for the Planning of Education, incorporated standardized procedures for the period up to 1985, but this

plan did not find acceptance as an instrument for regulating and influencing education policy. An attempt to continue the plan was aborted.

On the one hand, the political consensus was not strong enough to implement such a planning system. On the other, data essential for planning education policy, such as the demand for training or the demand for workers on the labour market, could neither be foreseen accurately enough nor be determined by policy (Raschert, 1980, p. 190 ff.; Weishaupt, 1988, p. 31 ff).

The Vocational Training Promotion Act of 1981 gives planning the limited goal to "help to ensure in particular that the nature, number, size and location of training establishments are such that a qualitatively sufficient supply of vocational training places is guaranteed and that optimal use (is) made of such training establishments while giving due consideration to the demand for training places expected in the long term" (Section 2, § 2).

The principle tool for such a vocational training planning strategy is statistical information on the demand for training places, the number of places available and on examination candidates. All further information is provided by empirical research on vocational training and the labour market. Section 3 of the Vocational Training Promotion Act notably obliges the federal government to make a prediction in its annual vocational training report of the number of training places available the following year.

Vocational training planned in this manner cannot accommodate normative requirements, especially as the distribution of trainees over the different training occupations largely depends on the availability of places. This method is more a way of supplying the State with statistical information so that its education policy can ensure – with specific measures if necessary – that a sufficient number of training places is available. Research into vocational training serves two purposes: to encourage improvement in the quality of vocational training and contribute towards reaching consensus among the various bodies responsible for education policy (*e.g.* the reorganisation of training occupations).

The Federal Institute for Vocational Training carries out most of the research on planning and operating enterprise-based vocational training. In a few *Länder*, regional institutes carry out research into school-based vocational training. The umbrella organisations of the social partners have a few research establishments (the Economic and Sociological Institute of the German Trade Union Federation, Institute of the German Economy), which study particular aspects of vocational training. Vocational training research is also carried out at numerous establishments of higher education, though mainly for educational purposes.

4. Prospects for reforming the dual system

Vocational training in enterprises was regulated as a whole for the first time in its history with the enactment of the Vocational Training Act in 1969. This law entrenches the most important results of a first modernisation process of the dual system which started at the turn of the century:

- industrial vocational training as an independent training route alongside training in the craft trades;
- vocational schools as providers of mandatory schooling;
- state regulation of vocational training with the trade unions enjoying recognised rights of participation (Greinert, 1992, p. 69).

The Vocational Training Act builds to a large extent on the regulatory principles developed by the chambers and the umbrella associations of trade and industry. Although the act was passed by a large parliamentary majority of the Grand Coalition (CDU and SPD), the trade unions in particular were not satisfied.

Against the background of an extended, socio-political debate on a comprehensive reform of education, the early 1970s witnessed vehement political discussions on vocational training. The social partners, as well as the governing parties, the SPD and the FDP, the federal government and the *Länder*, and even the *Länder* among themselves, all had differing opinions. The role of the training place market as a control mechanism and the role of enterprises as providers of vocational training were two of the most hotly contested issues.

Critics of the Vocational Training Act maintained that the training place market could not guarantee an adequate and regionally balanced supply of high-quality training places under the existing legal framework. They feared that enterprise-based training would lead to trainees being used as cheap labour. And finally, they believed that on-the-job training was not suitable for satisfying the growing demand for general education and occupation-related theoretical knowledge.

They demanded that something be done to resist the predominant influence of the economy in regulating vocational training. They insisted that general education and vocational training be given equal legal and educational status and that the bulk of training, or at least much more than was then the case, be put in the hands of public educational institutions. These demands were not met, as described in Part I, because of the massive resistance of the employers.

The criticism, emanating above all from the trade unions with regard to the way the training place market worked, flamed up again in the mid-1970s following the shortage of training places in vocational education. Unlike in the early 1970s, the trade unions no longer felt that entrusting vocational training almost entirely to the State and the schools would be the solution to the problem. They were now in favour of financing training through a levy system which they saw as a quality-oriented regulatory instrument.

This change of heart in the trade unions was brought about mainly by the refusal of the *Länder* to grant the social partners a say in the organisation of vocational training in schools (Schmidt, 1979, p. 15). Up until now, the trade unions have not found support for their demand that a levy system replace the financing of vocational training by individual enterprises.

Since the 1970s at the latest, once the debate on reform had died down, the basic regulatory principles of the dual system as laid down in the Vocational Training Act became largely recognised:

- the main responsibility for providing and financing an adequate supply of training lies with the enterprises;
- enterprises and part-time vocational schools are the joint providers of vocational training;
- the training place market must be (partially) regulated by the public authorities;
- the participation of the trade associations and the importance of autonomy in regulating the dual system are recognised.

On the basis of this fundamental consensus regarding regulatory policy, the focus of modernisation efforts shifted in the 1980s to adapting the contents and methods of vocational training to the requirements of a rapidly changing, highly sophisticated world of work. The creation of broader-based training occupations and multi-skill key qualifications now became the central task.

It should be noted that in the 1970s and 1980s, the period under study in this report, there were no reforms in the basic ways in which vocational training was conducted, financed or regulated in Germany. Some consider this to be an expression of the dual system's high degree of internal flexibility in adapting to the demand for training places and see its capacity to innovate as reflecting its quality. They cite such challenges as the crisis which lasted until the mid-1980s when the young people born during the baby boom had to be absorbed, and the comprehensive restructuring of numerous training occupations (*e.g.* in the metalworking and electrical engineering industries). Sceptics, however, fear that the dual system may have become resistant to reform due to its firmly established structures (Stratmann and Schlösser, 1990, p. 300). Many authors point out the danger of the dual system falling into a severe crisis (*e.g.* Greinert, 1992).

It is generally believed that the future of the dual system will depend on the way in which the following challenges are handled:

a) The decline in the number of school leavers coupled with a growing preference for higher general and academic education, including special enterprise-based training for young people with university entrance qualifications, expose the dual system to increasing competition from other forms of education and training. There is a danger that the allocation of (occupational) positions and social status will be based primarily on school performance and qualifications – as is the case in other education systems. Vocational training in the dual system would thus become less attractive to those seeking a training place (Lutz, 1991). Certain occupational groups are threatened by a severe shortage of skilled blue- and white-collar workers and master craftsmen. At the same time, those who have undergone training within the dual system might be faced with restrictions affecting fields in which they can find employment and in their career prospects. New and often higher requirements are resulting from the introduction of new ideas, permitting a more flexible and quality-oriented work organisation, and a growing number of graduates from specialised institutes and universities risk increasing competition for jobs and career advancement.
One of the most important tasks of vocational training policy in the 1990s will certainly be to ensure the long-term attractiveness of on-the-job vocational training compared with higher general and university educational paths. In this

respect it is also important to encourage better students to take up training within the dual system. The parties responsible generally agree that new and attractive initial and continuing training programmes have to be developed and more opportunities created for young people to go on from dual system vocational training to higher education. On this point, the education system shows little permeability.

In addition, the social partners must in the future make employment conditions, salaries and career prospects more attractive for young skilled workers within the context of a new work organisation. At the same time, slow learners and socially disadvantaged young people must be given more opportunities to obtain vocational qualifications. Whether more individualised training, better geared to the learning abilities and motivation of these target groups, would suffice or whether less demanding, less theoretical training courses, below skilled blue- and white-collar worker level need to be introduced is still a matter of debate. Controversy still exists also, regarding the precautions needed to ensure in the future an adequate supply of high-quality training places in enterprises. In view of growing demands for quality training and the resulting costs, inter-enterprise forms of training and financing might well become more important.

b) An acceleration in changes in occupational structures and skill requirements as well as increased demands for mobility on the labour market might lead to an emphasis on continuing training in the first few years of employment at the expense of initial training. It is becoming rare that an employee takes up a job corresponding exactly with the occupation for which he was trained. Furthermore, the course of an employee's career is increasingly influenced by the continuing training he or she undergoes. Some authors (*e.g.* Geissler, 1991) believe that this trend could jeopardise the main organisational principle of dual training, *i.e.* orientation to the occupation one will later pursue.

For vocational training provided in an occupational grouping or category, it will also be necessary to ensure high occupational mobility and flexibility by covering a wide enough variety of training occupations and integrating to a greater extent training contents that are geared to a cross-section of occupations. Nevertheless, the interests of the training enterprises must also be taken into account: they want to be able to employ their trainees as full-fledged skilled workers as soon as possible after they have finished their training.

c) Changes in learning conditions in the workplace and growing demands for theoretical knowledge as a result of complex and highly mechanised working processes not only call into question traditional learning methods but also the ways training has been organised up until now. The two traditional learning venues, the workplace and vocational schools, are losing importance. A modern view of training can no longer clearly divide theory and practical training stages and assign them to one of the two providers of training, the vocational school or the enterprise. New forms of organising training and co-ordination between the various providers of training, including extra-plant training centres, are becoming necessary, and the training functions of the individual providers of training have to be reassessed.

d) The introduction of the dual system in the new *Länder* might also have consequences that go beyond purely regional problems of transition associated with transforming a training system in a new economic and socio-political context. It could well have an impact on the way vocational training is organised and financed in the whole country in the future.

e) In the context of European integration, training contents, training qualifications and training paths can no longer remain solely oriented to the national situation. Although EC vocational training policy does not aim to harmonize the vocational training systems of Member States, a certain convergence in the quality standards of vocational training will become necessary in an increasingly Europeanised training and labour market. This will imply updating training contents and qualifications as well as imitating exemplary training practices and regulations of other countries.

At present, it is difficult to predict whether these future challenges can be met by continuing to update certain areas little by little, or whether a structural reform of the vocational training system will be necessary.

Whatever the case may be, those responsible will need to be extremely well prepared and willing to reach agreement on appropriate solutions, even if this adaptation process requires structural changes. The traditionally strong willingness of the social groups to reach compromise on vocational training issues, within the framework of stable and recognised institutions that ensure co-operation and the reconciliation of interests, provides a good prerequisite for reaching agreement. There is every hope, therefore, that the dual system will continue to provide an adequate framework not only for limited modernisation but also for new types of institutional solutions.

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1. A 1984/85 survey of trainees in metalworking, electro-engineering, commercial and administrative occupations revealed that only 59 per cent of trainees were undergoing training in the occupations they really wanted to learn (Herget *et al.*, 1987, p. 90 ff).
2. For example, in the mid-1980s almost 60 per cent of skilled workers had been trained in craft trades. However, only about 30 per cent of all skilled workers find employment in this area (Alex and Stooß, 1985, p. 14).
3. The law gave the federal government the power to impose a vocational training tax of up to 0.25 per cent of the annual total wages if the overall availability of training places did not exceed demand by at least 12.5 per cent. The decision on whether to apply the law was to be made on the basis of the annual vocational training report. Small enterprises whose total wages did not exceed DM 400 000 (US$ 169 320)were excluded from the regulation. The income was to be used to assist enterprises which set up additional training places over and above their average of the preceding three years or which had preserved endangered training places. Subsidies for external training centres were part of the plan as well.
4. In 1987, approximately half the total number of trainees (52 per cent) received their training in enterprises with 50 or fewer employees.
5. A 1985 survey of workforce members whose highest qualification was dual system vocational training showed that 35 per cent had changed their occupation once or several times (BMBW, Annual, 1987, p. 83).
6. There are currently more than 30 000 different job designations in Germany. The classification of these occupations reflects specialised job profiles which have emerged and become widely recognised over the decades. Generally, they are defined for all levels of qualification by training regulations and corresponding fields of activities (Buttler and Stooß, 1993, p. 136).
7. See following section on the revision of the training contents as well as Benner and Püttmann (1992).
8. Stage-based training was introduced for the electrical occupations in 1972. However, in the 1980s, it was replaced by a standard three-year training programme.

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